

FOOD ADDITIVES

A MEDICAL DICTIONARY, BIBLIOGRAPHY,
AND ANNOTATED RESEARCH GUIDE TO
INTERNET REFERENCES



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AND PHILIP M. PARKER, PH.D., EDITORS

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FORWARD

In March 2001, the National Institutes of Health issued the following warning: "The number of Web sites offering health-related resources grows every day. Many sites provide valuable information, while others may have information that is unreliable or misleading."¹ Furthermore, because of the rapid increase in Internet-based information, many hours can be wasted searching, selecting, and printing. Since only the smallest fraction of information dealing with food additives is indexed in search engines, such as **www.google.com** or others, a non-systematic approach to Internet research can be not only time consuming, but also incomplete. This book was created for medical professionals, students, and members of the general public who want to know as much as possible about food additives, using the most advanced research tools available and spending the least amount of time doing so.

In addition to offering a structured and comprehensive bibliography, the pages that follow will tell you where and how to find reliable information covering virtually all topics related to food additives, from the essentials to the most advanced areas of research. Public, academic, government, and peer-reviewed research studies are emphasized. Various abstracts are reproduced to give you some of the latest official information available to date on food additives. Abundant guidance is given on how to obtain free-of-charge primary research results via the Internet. **While this book focuses on the field of medicine, when some sources provide access to non-medical information relating to food additives, these are noted in the text.**

E-book and electronic versions of this book are fully interactive with each of the Internet sites mentioned (clicking on a hyperlink automatically opens your browser to the site indicated). If you are using the hard copy version of this book, you can access a cited Web site by typing the provided Web address directly into your Internet browser. You may find it useful to refer to synonyms or related terms when accessing these Internet databases. **NOTE:** At the time of publication, the Web addresses were functional. However, some links may fail due to URL address changes, which is a common occurrence on the Internet.

For readers unfamiliar with the Internet, detailed instructions are offered on how to access electronic resources. For readers unfamiliar with medical terminology, a comprehensive glossary is provided. For readers without access to Internet resources, a directory of medical libraries, that have or can locate references cited here, is given. We hope these resources will prove useful to the widest possible audience seeking information on food additives.

The Editors

¹ From the NIH, National Cancer Institute (NCI): <http://www.cancer.gov/cancerinfo/ten-things-to-know>.

CHAPTER 1. STUDIES ON FOOD ADDITIVES

Overview

In this chapter, we will show you how to locate peer-reviewed references and studies on food additives.

The Combined Health Information Database

The Combined Health Information Database summarizes studies across numerous federal agencies. To limit your investigation to research studies and food additives, you will need to use the advanced search options. First, go to <http://chid.nih.gov/index.html>. From there, select the “Detailed Search” option (or go directly to that page with the following hyperlink: <http://chid.nih.gov/detail/detail.html>). The trick in extracting studies is found in the drop boxes at the bottom of the search page where “You may refine your search by.” Select the dates and language you prefer, and the format option “Journal Article.” At the top of the search form, select the number of records you would like to see (we recommend 100) and check the box to display “whole records.” We recommend that you type “food additives” (or synonyms) into the “For these words:” box. Consider using the option “anywhere in record” to make your search as broad as possible. If you want to limit the search to only a particular field, such as the title of the journal, then select this option in the “Search in these fields” drop box. The following is what you can expect from this type of search:

- **All About Food Additives: What Goes in Your Food and Why**

Source: Diabetes Self-Management. p. 22, 24-26. November-December 1993.

Contact: Available from R.A. Rapaport Publishing, Inc. 150 West 22nd Street, New York, NY 10011. (800) 234-0923.

Summary: This article about food additives discusses the reasons food additives are used; types of food additives, including indirect and direct additives; how and why additives are used; additives that have been the subject of controversy or concern, including some sweeteners, caffeine, food coloring, monosodium glutamate (MSG), sulfites, and nitrates; regulations that govern the use of additives; and the importance of reading food labels. One table summarizes food additives by function and the foods where that additive is commonly used. 1 table.

Federally Funded Research on Food Additives

The U.S. Government supports a variety of research studies relating to food additives. These studies are tracked by the Office of Extramural Research at the National Institutes of Health.² CRISP (Computerized Retrieval of Information on Scientific Projects) is a searchable database of federally funded biomedical research projects conducted at universities, hospitals, and other institutions.

Search the CRISP Web site at http://crisp.cit.nih.gov/crisp/crisp_query.generate_screen. You will have the option to perform targeted searches by various criteria, including geography, date, and topics related to food additives.

For most of the studies, the agencies reporting into CRISP provide summaries or abstracts. As opposed to clinical trial research using patients, many federally funded studies use animals or simulated models to explore food additives. The following is typical of the type of information found when searching the CRISP database for food additives:

- **Project Title: AN IN VITRO ROBOTIC ASSAY FOR ESTROGENIC ACTIVITY**

Principal Investigator & Institution: Yang, Cathy Z.; Certichem, Inc. 5105 Evans Ave, Ste 101 Austin, Tx 78751

Timing: Fiscal Year 2002; Project Start 01-MAR-2002; Project End 28-FEB-2003

Summary: (provided by applicant): Recent scientific investigations have shown that many chemicals used in plastics, pharmaceuticals, pesticides, cosmetics, **food additives**, etc., are endocrine disruptors that interfere in various ways with the action of estrogen, androgen, or thyroid hormones. The most common endocrine effects of disruptor involve estrogenic activity that can have significant deleterious effects on many physiological processes at very low (picomolar to nanomolar) concentrations, especially on fetal or developing mammals. The prevalence and actions of endocrine disruptors in our environment warrants the development of highly specific, sensitive, reliable, rapid, and cost-effective detection. A high throughput robotic cell proliferation assay would constitute such a test. Hence, in this SBIR Phase I proposal, CertiChem proposes to develop a high throughput robotic assay to detect estrogenic activity by measuring in vitro proliferation of MCF-7 cells. Such a robotic screening assay should be commercially important because of the large number of chemicals (> 10,000) and mixtures of chemicals that should be screened for estrogenic activity by profit, non-profit, or governmental entities. Our preliminary data demonstrate that CertiChem has the expertise to develop this in vitro robotic assay for estrogenic activity. PROPOSED COMMERCIAL APPLICATION: NOT AVAILABLE

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: CARCINOGENIC POTENCY DATABASE**

Principal Investigator & Institution: Gold, Lois S.; University of California Berkeley Berkeley, Ca 94720

Timing: Fiscal Year 2002

² Healthcare projects are funded by the National Institutes of Health (NIH), Substance Abuse and Mental Health Services (SAMHSA), Health Resources and Services Administration (HRSA), Food and Drug Administration (FDA), Centers for Disease Control and Prevention (CDCP), Agency for Healthcare Research and Quality (AHRQ), and Office of Assistant Secretary of Health (OASH).

Summary: The Carcinogenic Potency Database (CPDB) is described as a "standardized, exhaustive, and easily accessible database of results of chronic, long-term animal cancer test on individual chemicals" that permits investigations into many areas of carcinogenesis research. The core has two goals: to facilitate its use by other investigators, and to use the database to evaluate how animal cancer tests results are used in identifying human carcinogens and setting regulatory priorities. During the past five years, the core has continued to add to and refine the database, and has developed a web site for access to the database, which includes summary tables that can be downloaded by the user. The database includes an estimation of carcinogenic potency, the TD50 for 1,357 chemicals, summarizing the results of 5,240 experiments. Details of each experiment such as strain, sex, and target organ are included. Quality control efforts for data put into the database include independent analysis of the published results on a chemical by at least two people, computer comparison of the authors' analyses, and resolution of any discrepancies. The CPDB includes information on experiments performed in hamsters, nonhuman primates, dogs and rodents. Genotoxicity results from the Salmonella test are also included in the database, and results are linked to the NIEHS database of genotoxicity results on chromosomal aberrations, sister chromatid exchange, mouse lymphoma mutations, and drosophila sex-linked recessive lethal test. Development of the World Wide Web site allows ready access to the CPDB, which includes 60 searchable pages. The Web site is also included in a number of general Web page indices and is linked to a number of other home pages throughout the world. Additional information about effect of diet and micronutrients on carcinogenic potency is accessible through the database. One hundred seventy experiments on 70 food mixtures have been put into the database to date. Analyses using the database have also continued during the past grant period. These analyses have addressed such questions as the usefulness of animal testing, interpretation of results of animals testing, effect of cell death induced by high doses of chemicals on results of animal tests and extrapolation of animal data to humans. Others areas that have been explored are use of the LD50 and the maximally tolerated dose to predict hazard from new chemicals to humans, and investigations into the accuracy of risk calculations for human exposure to pesticide residues. Other lines of investigation are also in progress. Future plans are to develop the database chronologically as new test results are published and inclusion of previously unpublished FDA results on **food additives** and pharmaceuticals. The database of experiments on micronutrients will be further developed, and new exposure estimates and test results will be used to update risk for specific chemicals. The database will be used in the future to address important issues in carcinogenesis, including interspecies extrapolation, positivity, and mutagenicity. Dietary components and hazards in the workplace will also be ranked using actual exposure estimates.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: PHARMACOKINETICS/TOXICOLOGY OF CARRAGEENAN MICROBICIDES**

Principal Investigator & Institution: Anazodo, Michael; Population Council 1 Dag Hammarskjold Plaza New York, Ny 10017

Timing: Fiscal Year 2002

Description (provided by applicant): Advances in HIV therapy have extended the life expectancy of thousands but have not significantly affected HIV transmission. Prevention or reduction in transmission worldwide may require identification of an effective anti-microbial agent. In keeping with this view, the applicant's laboratory and

those of his collaborators have initiated scientific research of the anti-viral properties of the carrageenans. This proposal seeks to characterize the stability, toxicology and the pharmacokinetics (PK) of PDR 98-15 carrageenan, and its derivatives Zinc- and Lignosulfonic acid (LSA)-carrageenan with the ultimate goal of establishing their value as microbicides. Although toxicology on the carrageenans demonstrated their safety as **food additives**, their use as pharmaceuticals require more detailed evaluation of their toxicity profile. In addition, the generation and LSA-carrageenan from PDR 98-15 may have created new compounds with unknown physicochemical pharmacological and toxicological properties. The test compounds will be labeled with molecular tags to enable the detection. Detection and analysis, by viscosity, liquid scintillation, size exclusion/ permeation chromatography coupled to multi-angle laser light scattering refractive index detection and/or by immuno-detection. Information on binding studies may help to explain anti-viral mechanism, while stability is required for safe storage purposes, since the final product is expected to be predominantly used in the developing world where infrastructure may be problematic. The toxicology and irritation potentials will be evaluated in mice and rabbits during prolonged intra-vaginal application. An extended toxicity profile is necessary since the final product may be considered to be used chronically, due to its indication. PKs will be evaluated by the intravenous route because patients with vaginal lesions may also use vaginal microbicides, makes blood PK studies desirable. The overall data may provide new information needed for optimization of compounds, and in the design of the next generations of carrageenan-based microbicides.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

E-Journals: PubMed Central³

PubMed Central (PMC) is a digital archive of life sciences journal literature developed and managed by the National Center for Biotechnology Information (NCBI) at the U.S. National Library of Medicine (NLM).⁴ Access to this growing archive of e-journals is free and unrestricted.⁵ To search, go to <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Pmc>, and type "food additives" (or synonyms) into the search box. This search gives you access to full-text articles. The following is a sample of items found for food additives in the PubMed Central database:

- **Changes in lipid composition of *Escherichia coli* resulting from growth with organic solvents and with food additives.** by Ingram LO.; 1977 May;
<http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=170858>
- **Inhibition by antimicrobial food additives of ochratoxin A production by *Aspergillus sulphureus* and *Penicillium viridicatum*.** by Tong CH, Draughon FA.; 1985 Jun;
<http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=241738>

³ Adapted from the National Library of Medicine: <http://www.pubmedcentral.nih.gov/about/intro.html>.

⁴ With PubMed Central, NCBI is taking the lead in preservation and maintenance of open access to electronic literature, just as NLM has done for decades with printed biomedical literature. PubMed Central aims to become a world-class library of the digital age.

⁵ The value of PubMed Central, in addition to its role as an archive, lies in the availability of data from diverse sources stored in a common format in a single repository. Many journals already have online publishing operations, and there is a growing tendency to publish material online only, to the exclusion of print.

The National Library of Medicine: PubMed

One of the quickest and most comprehensive ways to find academic studies in both English and other languages is to use PubMed, maintained by the National Library of Medicine.⁶ The advantage of PubMed over previously mentioned sources is that it covers a greater number of domestic and foreign references. It is also free to use. If the publisher has a Web site that offers full text of its journals, PubMed will provide links to that site, as well as to sites offering other related data. User registration, a subscription fee, or some other type of fee may be required to access the full text of articles in some journals.

To generate your own bibliography of studies dealing with food additives, simply go to the PubMed Web site at <http://www.ncbi.nlm.nih.gov/pubmed>. Type "food additives" (or synonyms) into the search box, and click "Go." The following is the type of output you can expect from PubMed for food additives (hyperlinks lead to article summaries):

- **A combination of wheat flour, ethanol and food additives inducing FDEIA.**
 Author(s): Fiedler EM, Zuberbier T, Worm M.
 Source: Allergy. 2002 November; 57(11): 1090-1.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12359022&dopt=Abstract
- **A new approach for assessing the dietary exposure to food additives.**
 Author(s): Graham DM, Filer LJ, Bigelow SW.
 Source: Critical Reviews in Food Science and Nutrition. 1992; 32(2): 157-60.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1515043&dopt=Abstract
- **A procedure for the safety evaluation of flavouring substances. Joint FAO/WHO Expert Committee on Food Additives.**
 Author(s): Munro IC, Kennepohl E, Kroes R.
 Source: Food and Chemical Toxicology : an International Journal Published for the British Industrial Biological Research Association. 1999 February-March; 37(2-3): 207-32. Review.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10227744&dopt=Abstract
- **A structure-activity prediction model of carcinogenicity based on NCI/NTP assays and food additives.**
 Author(s): Enslein K, Borgstedt HH, Tomb ME, Blake BW, Hart JB.
 Source: Toxicology and Industrial Health. 1987 March; 3(1): 267-87.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3590207&dopt=Abstract

⁶ PubMed was developed by the National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM) at the National Institutes of Health (NIH). The PubMed database was developed in conjunction with publishers of biomedical literature as a search tool for accessing literature citations and linking to full-text journal articles at Web sites of participating publishers. Publishers that participate in PubMed supply NLM with their citations electronically prior to or at the time of publication.

- **Acceptable daily intake of food additives and ceiling on levels of use.**
Author(s): Hansen SC.
Source: Food Cosmet Toxicol. 1966 August; 4(4): 427-32. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=5975248&dopt=Abstract
- **Acceptable dose of food additives.**
Author(s): Tobe M.
Source: J Toxicol Sci. 1988 November; 13(4): 265-7. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3149681&dopt=Abstract
- **Advances in the safety evaluation of food additives. A conceptual and historical overview of the Acceptable Daily Intake (ADI) and Acceptable Daily Intake 'not specified'.**
Author(s): Vettorazzi G.
Source: Food Additives and Contaminants. 1987 October-December; 4(4): 331-56. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3315754&dopt=Abstract
- **Adverse reactions to food additives in children with atopic symptoms.**
Author(s): Fuglsang G, Madsen G, Halken S, Jorgensen S, Ostergaard PA, Osterballe O.
Source: Allergy. 1994 January; 49(1): 31-7.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8198237&dopt=Abstract
- **Adverse reactions to food additives.**
Author(s): MacGibbon B.
Source: The Proceedings of the Nutrition Society. 1983 June; 42(2): 233-40. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6351081&dopt=Abstract
- **Adverse reactions to food additives.**
Author(s): Simon RA.
Source: Curr Allergy Asthma Rep. 2003 January; 3(1): 62-6. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12542996&dopt=Abstract
- **Adverse reactions to food additives.**
Author(s): Wuthrich B.
Source: Ann Allergy. 1993 October; 71(4): 379-84.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8214803&dopt=Abstract

- **Adverse reactions to food additives.**
 Author(s): Lessof MH.
 Source: Journal of the Royal College of Physicians of London. 1987 October; 21(4): 237-40. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3316621&dopt=Abstract
- **Adverse reactions to food additives.**
 Author(s): Simon RA.
 Source: N Engl Reg Allergy Proc. 1986 November-December; 7(6): 533-42. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3302664&dopt=Abstract
- **Adverse reactions to foods and food additives.**
 Author(s): Ferguson A.
 Source: Hum Toxicol. 1987 September; 6(5): 339-41. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3679241&dopt=Abstract
- **Allergic potential of food additives: a report of a case of tartrazine sensitivity without aspirin intolerance.**
 Author(s): Zlotlow MJ, Settupane GA.
 Source: The American Journal of Clinical Nutrition. 1977 July; 30(7): 1023-5.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=327790&dopt=Abstract
- **An analysis of the possibility for health implications of joint actions and interactions between food additives.**
 Author(s): Groten JP, Butler W, Feron VJ, Kozianowski G, Renwick AG, Walker R.
 Source: Regulatory Toxicology and Pharmacology : Rtp. 2000 February; 31(1): 77-91. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10715227&dopt=Abstract
- **An animal model of the hyperactive-child syndrome suitable for the study of the effects of food additives.**
 Author(s): Barcus R, Schwebel AI, Corson SA.
 Source: Pavlov J Biol Sci. 1980 October-December; 15(4): 183-7. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7208129&dopt=Abstract
- **An assessment of the safety of tocopherols as food additives.**
 Author(s): Tomassi G, Silano V.
 Source: Food and Chemical Toxicology : an International Journal Published for the British Industrial Biological Research Association. 1986 October-November; 24(10-11): 1051-61. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3542757&dopt=Abstract

- **An evaluation of the decision tree approach for assessing priorities for safety testing of food additives.**
 Author(s): Phillips JC, Purchase R, Watts P, Gangolli SD.
 Source: Food Additives and Contaminants. 1987 April-June; 4(2): 109-23.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3595920&dopt=Abstract
- **Argument against use of food additives for osteoarthritis of the hip.**
 Author(s): Callaghan JJ, Buckwalter JA, Schenck RC Jr.
 Source: Clinical Orthopaedics and Related Research. 2000 December; (381): 88-90.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11127674&dopt=Abstract
- **Aspirin-like effects of selected food additives and industrial sensitizing agents.**
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http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6745550&dopt=Abstract
- **Survey of residual solvents in natural food additives by standard addition head-space GC.**
 Author(s): Uematsu Y, Hirata K, Suzuki K, Iida K, Kamata K.
 Source: Food Additives and Contaminants. 2002 April; 19(4): 335-42.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11962690&dopt=Abstract
- **Synthetic food additives as a source of calories: 1,3-butanediol.**
 Author(s): Mehlman MA.
 Source: Fed Proc. 1975 November; 34(12): 2166. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1183619&dopt=Abstract
- **Testing guidelines for evaluation of the immunotoxic potential of direct food additives.**
 Author(s): Hinton DM.
 Source: Critical Reviews in Food Science and Nutrition. 1992; 32(2): 173-90. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1515046&dopt=Abstract
- **The acceptable daily intake of food additives.**
 Author(s): Bigwood EJ.
 Source: Crc Crit Rev Toxicol. 1973 June; 2(1): 41-93. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=4725685&dopt=Abstract
- **The applicability of the ADI (Acceptable Daily Intake) for food additives to infants and children.**
 Author(s): Ostergaard G, Knudsen I.
 Source: Food Additives and Contaminants. 1998; 15 Suppl: 63-74.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9602914&dopt=Abstract
- **The application of in vitro data in the derivation of the acceptable daily intake of food additives.**
 Author(s): Walton K, Walker R, van de Sandt JJ, Castell JV, Knapp AG, Kozianowski G, Roberfroid M, Schilter B.
 Source: Food and Chemical Toxicology : an International Journal Published for the British Industrial Biological Research Association. 1999 December; 37(12): 1175-97. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10654594&dopt=Abstract

- **The approach adopted in the UK for the estimation of the intake of food additives.**
 Author(s): Lawrie CA, Rees NM.
 Source: Food Additives and Contaminants. 1996 May-June; 13(4): 411-6. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8792131&dopt=Abstract
- **The comet assay with 8 mouse organs: results with 39 currently used food additives.**
 Author(s): Sasaki YF, Kawaguchi S, Kamaya A, Ohshita M, Kabasawa K, Iwama K, Taniguchi K, Tsuda S.
 Source: Mutation Research. 2002 August 26; 519(1-2): 103-19.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12160896&dopt=Abstract
- **The establishment of common language concerning adverse reactions to foods and food additives.**
 Author(s): Anderson JA.
 Source: The Journal of Allergy and Clinical Immunology. 1986 July; 78(1 Pt 2): 140-4.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3722641&dopt=Abstract
- **The food factor and the scientific nurse. Food additives: separating fact from fiction.**
 Author(s): Jackson MP.
 Source: Aust Nurses J. 1984 December-January; 13(6): 32-4. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6559569&dopt=Abstract
- **The food factor and the scientific nurse. Food additives: separating fact from fiction--Part II.**
 Author(s): Jackson MP.
 Source: Aust Nurses J. 1984 February; 13(7): 30-2. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6561026&dopt=Abstract
- **The prevalence of reaction to food additives in a survey population.**
 Author(s): Young E, Patel S, Stoneham M, Rona R, Wilkinson JD.
 Source: Journal of the Royal College of Physicians of London. 1987 October; 21(4): 241-7.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3681784&dopt=Abstract
- **The results of skin testing with food additives and the effect of an elimination diet in chronic and recurrent urticaria and recurrent angioedema.**
 Author(s): Malanin G, Kalimo K.
 Source: Clinical and Experimental Allergy : Journal of the British Society for Allergy and Clinical Immunology. 1989 September; 19(5): 539-43.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2790561&dopt=Abstract

- **The role of food additives and intolerance reactions to food.**
 Author(s): Smith MR, Morrow T, Safford RJ.
 Source: Bibl Nutr Dieta. 1991; (48): 72-80. Review. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1930125&dopt=Abstract
- **Threshold of estimated toxicity for regulation of indirect food additives.**
 Author(s): Matthews EJ, Machuga EJ.
 Source: Toxicology Letters. 1995 September; 79(1-3): 123-9. Review.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7570649&dopt=Abstract
- **Toxicological evaluation of food additives and pesticide residues and their "acceptable daily intakes" for man: the role of WHO, in conjunction with FAO.**
 Author(s): Lu FC.
 Source: Residue Rev. 1973; 45: 81-93. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=4707903&dopt=Abstract
- **Toxicological evaluation of food additives. Toxicological evaluation over estimation of potential high intake to permitted levels of use of food additives and vice versa.**
 Author(s): Hansen SC.
 Source: Regulatory Toxicology and Pharmacology : Rtp. 1990 February; 11(1): 3-7.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2330416&dopt=Abstract
- **Underestimation of chronic toxicities of food additives and chemicals: the bias of a phantom rule.**
 Author(s): Kon SH.
 Source: Medical Hypotheses. 1978 July-August; 4(4): 324-39.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=713890&dopt=Abstract
- **Unsolicited food additives.**
 Author(s): Spodlick DH.
 Source: The New England Journal of Medicine. 1970 December 17; 283(25): 1412-3.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=5481767&dopt=Abstract
- **Unwrapping urticaria. The role of food additives.**
 Author(s): Podell RN.
 Source: Postgraduate Medicine. 1985 December; 78(8): 83-4, 87-8, 92 Passim.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=4070104&dopt=Abstract

- **Urinary metabolites of histamine and leukotrienes before and after placebo-controlled challenge with ASA and food additives in chronic urticaria patients.**
 Author(s): Di Lorenzo G, Pacor ML, Vignola AM, Profita M, Esposito-Pellitteri M, Biasi D, Corrocher R, Caruso C.
 Source: Allergy. 2002 December; 57(12): 1180-6.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12464047&dopt=Abstract
- **Urticaria and angioedema can be caused by food additives and dyes.**
 Author(s): Brown EB.
 Source: Ann Allergy. 1984 March; 52(3 Pt 1): 200. No Abstract Available.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6703416&dopt=Abstract
- **Use of nitrates and nitrites as food additives in Nordic countries.**
 Author(s): Poulsen E.
 Source: Oncology. 1980; 37(4): 299-301.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7192376&dopt=Abstract
- **Using epidemiology to regulate food additives: saccharin case-control studies.**
 Author(s): Cordle F, Miller SA.
 Source: Public Health Reports (Washington, D.C. : 1974). 1984 July-August; 99(4): 365-9.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6431484&dopt=Abstract
- **Validation analysis of probabilistic models of dietary exposure to food additives.**
 Author(s): Gilsenan MB, Thompson RL, Lambe J, Gibney MJ.
 Source: Food Additives and Contaminants. 2003 October; 20 Suppl 1: S61-72.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=14555358&dopt=Abstract
- **Value of oral provocation tests to aspirin and food additives in the routine investigation of asthma and chronic urticaria.**
 Author(s): Genton C, Frei PC, Pecoud A.
 Source: The Journal of Allergy and Clinical Immunology. 1985 July; 76(1): 40-5.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2861222&dopt=Abstract
- **Vitamins: nutrients, food additives, or medications.**
 Author(s): Gray MA.
 Source: Orthopaedic Nursing / National Association of Orthopaedic Nurses. 1993 November-December; 12(6): 59-61.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8121713&dopt=Abstract

- **Vitamins: nutrients, food additives, or medications--vitamin C.**

Author(s): Gray MA.

Source: Orthopaedic Nursing / National Association of Orthopaedic Nurses. 1994 March-April; 13(2): 79-81.

http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7854820&dopt=Abstract

Academic Periodicals covering Food Additives

Numerous periodicals are currently indexed within the National Library of Medicine's PubMed database that are known to publish articles relating to food additives. To find the latest studies published, go to <http://www.ncbi.nlm.nih.gov/pubmed>, type the name of the periodical into the search box, and click "Go."

If you want complete details about the historical contents of a journal, visit the following Web site: <http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi>. Here, type in the name of the journal or its abbreviation, and you will receive an index of published articles. At <http://locatorplus.gov/>, you can retrieve more indexing information on medical periodicals (e.g. the name of the publisher). Select the button "Search LOCATORplus." Then type in the name of the journal and select the advanced search option "Journal Title Search."

CHAPTER 2. NUTRITION AND FOOD ADDITIVES

Overview

In this chapter, we will show you how to find studies dedicated specifically to nutrition and food additives.

Finding Nutrition Studies on Food Additives

The National Institutes of Health's Office of Dietary Supplements (ODS) offers a searchable bibliographic database called the IBIDS (International Bibliographic Information on Dietary Supplements; National Institutes of Health, Building 31, Room 1B29, 31 Center Drive, MSC 2086, Bethesda, Maryland 20892-2086, Tel: 301-435-2920, Fax: 301-480-1845, E-mail: ods@nih.gov). The IBIDS contains over 460,000 scientific citations and summaries about dietary supplements and nutrition as well as references to published international, scientific literature on dietary supplements such as vitamins, minerals, and botanicals.⁷ The IBIDS includes references and citations to both human and animal research studies.

As a service of the ODS, access to the IBIDS database is available free of charge at the following Web address: <http://ods.od.nih.gov/databases/ibids.html>. Once you have entered the search area, you have three choices: (1) IBIDS Consumer Database, (2) Full IBIDS Database, or (3) Peer Reviewed Citations Only.

Now that you have selected a database, click on the "Advanced" tab. An advanced search allows you to retrieve up to 100 fully explained references in a comprehensive format. Type "food additives" (or synonyms) into the search box, and click "Go." To narrow the search, you can also select the "Title" field.

⁷ Adapted from <http://ods.od.nih.gov>. IBIDS is produced by the Office of Dietary Supplements (ODS) at the National Institutes of Health to assist the public, healthcare providers, educators, and researchers in locating credible, scientific information on dietary supplements. IBIDS was developed and will be maintained through an interagency partnership with the Food and Nutrition Information Center of the National Agricultural Library, U.S. Department of Agriculture.

The following is a typical result when searching for recently indexed consumer information on food additives:

- **EN takes a look at some common food additives.**
Source: Broihier, C. Environmental-nutrition (USA). (June 1996). volume 19(6) page 2.

Additional consumer oriented references include:

- **A primer on food additives.**
Source: FDA-Consum. Rockville, Md. : Food and Drug Administration, Department of Health & Human Services. October 1988. volume 22 (8) page 13-15, 17. ill. 0362-1332
- **Cancer-fighting food additives.**
Source: Raloff, J. Sci-News-Washington. [Washington, D.C. : Science Service]. February 15, 1992. volume 141 (7) page 104-106. 0036-8423
- **Diet and hyperactivity [Food additives, salicylates, Feingold diet].**
Source: Conning, D.M. Nutr-Bull-Br-Nutr-Found. London : The Foundation. January 1984. volume 9 (1) page 24-31. 0141-9684
- **Food additives offer both risks and benefits.**
Source: Environ-Nutr. New York, N.Y. : Environmental Nutrition, Inc. November 1989. volume 12 (11) page 1, 6. charts. 0893-4452
- **Food additives.**
Source: Wonnacott, J. Nutr-Food-Sci. London, Eng. : Forbes Publications. Jan/February 1986. (98) page 20-21. ill. 0034-6659
- **Micronutrients and antioxidants in processed foods--analysis of data from 1987 food additives survey.**
Source: Crane, N.T. Behlen, P.M. Yetley, E.A. Vanderveen, J.E. Nutr-Today. Baltimore, Md. : Williams & Wilkins. August 1990. volume 25 (4) page 36-40. charts. 0029-666X

The following information is typical of that found when using the "Full IBIDS Database" to search for "food additives" (or a synonym):

- **Current developments in food additive toxicology in the USA.**
Author(s): Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration, 200 C. St., S.W., Washington, DC 20204, USA. dhattan@cfsan.fda.gov
Source: Hattan, D G Kahl, L S Toxicology. 2002 December 27; 181-182: 417-20 0300-483X
- **Evaluation of food additives and low-toxicity compounds as alternative chemicals for the control of *Penicillium digitatum* and *Penicillium italicum* on citrus fruit.**
Author(s): Area de Postcollita, CeRTA, Centre UdL-IRTA, Av Rovira Roure 177, 25198 Lleida, Catalonia, Spain. lluis@uclac.edu
Source: Palou, L Usall, J Smilanick, J L Aguilar, M J Vinas, I Pest-Manag-Sci. 2002 May; 58(5): 459-66 1526-498X

Federal Resources on Nutrition

In addition to the IBIDS, the United States Department of Health and Human Services (HHS) and the United States Department of Agriculture (USDA) provide many sources of information on general nutrition and health. Recommended resources include:

- healthfinder®, HHS's gateway to health information, including diet and nutrition: <http://www.healthfinder.gov/scripts/SearchContext.asp?topic=238&page=0>
- The United States Department of Agriculture's Web site dedicated to nutrition information: www.nutrition.gov
- The Food and Drug Administration's Web site for federal food safety information: www.foodsafety.gov
- The National Action Plan on Overweight and Obesity sponsored by the United States Surgeon General: <http://www.surgeongeneral.gov/topics/obesity/>
- The Center for Food Safety and Applied Nutrition has an Internet site sponsored by the Food and Drug Administration and the Department of Health and Human Services: <http://vm.cfsan.fda.gov/>
- Center for Nutrition Policy and Promotion sponsored by the United States Department of Agriculture: <http://www.usda.gov/cnpp/>
- Food and Nutrition Information Center, National Agricultural Library sponsored by the United States Department of Agriculture: <http://www.nal.usda.gov/fnic/>
- Food and Nutrition Service sponsored by the United States Department of Agriculture: <http://www.fns.usda.gov/fns/>

Additional Web Resources

A number of additional Web sites offer encyclopedic information covering food and nutrition. The following is a representative sample:

- AOL: <http://search.aol.com/cat.adp?id=174&layer=&from=subcats>
- Family Village: http://www.familyvillage.wisc.edu/med_nutrition.html
- Google: <http://directory.google.com/Top/Health/Nutrition/>
- Healthnotes: <http://www.healthnotes.com/>
- Open Directory Project: <http://dmoz.org/Health/Nutrition/>
- Yahoo.com: <http://dir.yahoo.com/Health/Nutrition/>
- WebMD® Health: <http://my.webmd.com/nutrition>
- WholeHealthMD.com: <http://www.wholehealthmd.com/reflib/0,1529,00.html>

The following is a specific Web list relating to food additives; please note that any particular subject below may indicate either a therapeutic use, or a contraindication (potential danger), and does not reflect an official recommendation:

- **Vitamins**

- Vitamin B6**

- Source: Prima Communications, Inc. www.personalhealthzone.com

- **Food and Diet**

- Chocolate**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Clams**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Feingold Diet**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Grapefruit**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Kumquat**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Lemons**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Limes**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Mussels**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Natural Sweeteners**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Non-Nutritive and Artificial Sweeteners**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Oranges**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Oysters**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Refined Sweeteners**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Scallops**

- Source: Healthnotes, Inc.; www.healthnotes.com

Tangerines

Source: Healthnotes, Inc.; www.healthnotes.com

Ugli Tangelo Fruit

Source: Healthnotes, Inc.; www.healthnotes.com

Wheat

Source: Healthnotes, Inc.; www.healthnotes.com

CHAPTER 3. ALTERNATIVE MEDICINE AND FOOD ADDITIVES

Overview

In this chapter, we will begin by introducing you to official information sources on complementary and alternative medicine (CAM) relating to food additives. At the conclusion of this chapter, we will provide additional sources.

The Combined Health Information Database

The Combined Health Information Database (CHID) is a bibliographic database produced by health-related agencies of the U.S. federal government (mostly from the National Institutes of Health) that can offer concise information for a targeted search. The CHID database is updated four times a year at the end of January, April, July, and October. Check the titles, summaries, and availability of CAM-related information by using the “Simple Search” option at the following Web site: <http://chid.nih.gov/simple/simple.html>. In the drop box at the top, select “Complementary and Alternative Medicine.” Then type “food additives” (or synonyms) in the second search box. We recommend that you select 100 “documents per page” and to check the “whole records” options. The following was extracted using this technique:

- **FDA Guide to Dietary Supplements**

Source: FDA Consumer. 32(5): 28-35. September-October 1998.

Summary: This journal article provides an overview of the U.S. Food and Drug Administration's (FDA's) role in the regulation of dietary supplements, and offers tips to help consumers avoid potentially fraudulent or dangerous products. According to the author, the Dietary Supplement Health and Education Act (DSHEA) of 1994 gives manufacturers freedom to market more products as dietary supplements and provide information about the products' benefits. Under this law, however, the FDA's requirement for premarket review of dietary supplements is less stringent than that for products such as drugs and **food additives**. In the author's opinion, this means that consumers and manufacturers also have responsibility for checking the safety of dietary supplements and determining the truthfulness of label claims. The first part of this

article discusses the definition of a dietary supplement, premarket requirements for these products, and the types of claims supplement manufacturers are allowed to use. The second part outlines possible indicators of fraud, general consumer guidelines for avoiding poor quality products, and the steps consumers should take if they experience an adverse effect. The article includes a diagram explaining the new requirements for dietary supplement labels, and a chart listing supplements associated with possible health hazards.

National Center for Complementary and Alternative Medicine

The National Center for Complementary and Alternative Medicine (NCCAM) of the National Institutes of Health (<http://nccam.nih.gov/>) has created a link to the National Library of Medicine's databases to facilitate research for articles that specifically relate to food additives and complementary medicine. To search the database, go to the following Web site: <http://www.nlm.nih.gov/nccam/camonpubmed.html>. Select "CAM on PubMed." Enter "food additives" (or synonyms) into the search box. Click "Go." The following references provide information on particular aspects of complementary and alternative medicine that are related to food additives:

- **1-Methyl-4-phenylpyridinium (MPP+)-induced apoptosis and mitochondrial oxidant generation: role of transferrin-receptor-dependent iron and hydrogen peroxide.**
 Author(s): Kalivendi SV, Kotamraju S, Cunningham S, Shang T, Hillard CJ, Kalyanaraman B.
 Source: The Biochemical Journal. 2003 April 1; 371(Pt 1): 151-64.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12523938&dopt=Abstract
- **24-Hydroxylase: potential key regulator in hypervitaminosis D3 in growing dogs.**
 Author(s): Tryfonidou MA, Oosterlaken-Dijksterhuis MA, Mol JA, van den Ingh TS, van den Brom WE, Hazewinkel HA.
 Source: American Journal of Physiology. Endocrinology and Metabolism. 2003 March; 284(3): E505-13. Epub 2002 November 19.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12441310&dopt=Abstract
- **A 13-week subchronic toxicity study of paprika color in F344 rats.**
 Author(s): Kanki K, Nishikawa A, Furukawa F, Kitamura Y, Imazawa T, Umemura T, Hirose M.
 Source: Food and Chemical Toxicology : an International Journal Published for the British Industrial Biological Research Association. 2003 October; 41(10): 1337-43.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12909267&dopt=Abstract
- **A big issue about a little tissue.**
 Author(s): Mounce R.
 Source: Sadj. 2003 August; 58(7): 286-7. No Abstract Available.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=14649042&dopt=Abstract

- **A calcium-dependent bacterial surface protein is involved in the attachment of rhizobia to peanut roots.**
Author(s): Dardanelli M, Angelini J, Fabra A.
Source: Canadian Journal of Microbiology. 2003 June; 49(6): 399-405. Erratum In: Can J Microbiol. 2003 September; 49(9): 576.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=14569294&dopt=Abstract
- **A case of early renal functional impairment resolved with nutrients and botanicals.**
Author(s): Lamson DW, Wright JV.
Source: Alternative Medicine Review : a Journal of Clinical Therapeutic. 2003 February; 8(1): 55-8.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12611561&dopt=Abstract
- **A comparative study of root canal preparation using FlexMaster and HERO 642 rotary Ni-Ti instruments.**
Author(s): Hulsmann M, Gressmann G, Schafers F.
Source: International Endodontic Journal. 2003 May; 36(5): 358-66.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12752650&dopt=Abstract
- **A comparison of chelator-facilitated metal uptake by a halophyte and a glycophyte.**
Author(s): Jordan FL, Robin-Abbott M, Maier RM, Glenn EP.
Source: Environmental Toxicology and Chemistry / Setac. 2002 December; 21(12): 2698-704.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12463567&dopt=Abstract
- **A dynamic numerical model to characterize labile metal complexes collected with diffusion gradient in thin films devices.**
Author(s): Tusseau-Vuillemin MH, Gilbin R, Taillefert M.
Source: Environmental Science & Technology. 2003 April 15; 37(8): 1645-52.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12731849&dopt=Abstract
- **Glucuronidation as a mechanism of intrinsic drug resistance in human colon cancer: reversal of resistance by food additives.**
Author(s): Cummings J, Ethell BT, Jardine L, Boyd G, Macpherson JS, Burchell B, Smyth JF, Jodrell DL.
Source: Cancer Research. 2003 December 1; 63(23): 8443-50.
http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=14679008&dopt=Abstract

Additional Web Resources

A number of additional Web sites offer encyclopedic information covering CAM and related topics. The following is a representative sample:

- Alternative Medicine Foundation, Inc.: <http://www.herbmed.org/>

- AOL: <http://search.aol.com/cat.adp?id=169&layer=&from=subcats>
- Chinese Medicine: <http://www.newcenturynutrition.com/>
- drkoop.com®: <http://www.drkoop.com/InteractiveMedicine/IndexC.html>
- Family Village: http://www.familyvillage.wisc.edu/med_altn.htm
- Google: <http://directory.google.com/Top/Health/Alternative/>
- Healthnotes: <http://www.healthnotes.com/>
- MedWebPlus:
http://medwebplus.com/subject/Alternative_and_Complementary_Medicine
- Open Directory Project: <http://dmoz.org/Health/Alternative/>
- HealthGate: <http://www.tnp.com/>
- WebMD®Health: http://my.webmd.com/drugs_and_herbs
- WholeHealthMD.com: <http://www.wholehealthmd.com/reflib/0,1529,00.html>
- Yahoo.com: http://dir.yahoo.com/Health/Alternative_Medicine/

The following is a specific Web list relating to food additives; please note that any particular subject below may indicate either a therapeutic use, or a contraindication (potential danger), and does not reflect an official recommendation:

- **General Overview**

- Allergies and Sensitivities**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Amyloidosis**

- Source: Integrative Medicine Communications; www.drkoop.com

- Angioedema**

- Source: Integrative Medicine Communications; www.drkoop.com

- Asthma**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Attention Deficit-Hyperactivity Disorder**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Eczema**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Hives**

- Source: Healthnotes, Inc.; www.healthnotes.com

- Lyme Disease**

- Source: Integrative Medicine Communications; www.drkoop.com

Migraine Headache

Source: Integrative Medicine Communications; www.drkoop.com

Vertigo

Source: Healthnotes, Inc.; www.healthnotes.com

- **Alternative Therapy**

Fasting

Source: WholeHealthMD.com, LLC; www.wholehealthmd.com

Hyperlink:

http://www.wholehealthmd.com/refshelf/substances_view/0,1525,694,00.html

Orthomolecular Medicine

Source: Healthnotes, Inc.; www.healthnotes.com

- **Herbs and Supplements**

Bryonia Bryony

Alternative names: Bryony; Bryonia sp.

Source: Alternative Medicine Foundation, Inc.; www.amfoundation.org

Lecithin

Source: Prima Communications, Inc. www.personalhealthzone.com

Pimpinella

Alternative names: Anise; Pimpinella anisum (L)

Source: Alternative Medicine Foundation, Inc.; www.amfoundation.org

Warfarin

Source: Healthnotes, Inc.; www.healthnotes.com

General References

A good place to find general background information on CAM is the National Library of Medicine. It has prepared within the MEDLINEplus system an information topic page dedicated to complementary and alternative medicine. To access this page, go to the MEDLINEplus site at <http://www.nlm.nih.gov/medlineplus/alternativemedicine.html>. This Web site provides a general overview of various topics and can lead to a number of general sources.

CHAPTER 4. PATENTS ON FOOD ADDITIVES

Overview

Patents can be physical innovations (e.g. chemicals, pharmaceuticals, medical equipment) or processes (e.g. treatments or diagnostic procedures). The United States Patent and Trademark Office defines a patent as a grant of a property right to the inventor, issued by the Patent and Trademark Office.⁸ Patents, therefore, are intellectual property. For the United States, the term of a new patent is 20 years from the date when the patent application was filed. If the inventor wishes to receive economic benefits, it is likely that the invention will become commercially available within 20 years of the initial filing. It is important to understand, therefore, that an inventor's patent does not indicate that a product or service is or will be commercially available. The patent implies only that the inventor has "the right to exclude others from making, using, offering for sale, or selling" the invention in the United States. While this relates to U.S. patents, similar rules govern foreign patents.

In this chapter, we show you how to locate information on patents and their inventors. If you find a patent that is particularly interesting to you, contact the inventor or the assignee for further information. **IMPORTANT NOTE:** When following the search strategy described below, you may discover non-medical patents that use the generic term "food additives" (or a synonym) in their titles. To accurately reflect the results that you might find while conducting research on food additives, we have not necessarily excluded non-medical patents in this bibliography.

Patents on Food Additives

By performing a patent search focusing on food additives, you can obtain information such as the title of the invention, the names of the inventor(s), the assignee(s) or the company that owns or controls the patent, a short abstract that summarizes the patent, and a few excerpts from the description of the patent. The abstract of a patent tends to be more technical in nature, while the description is often written for the public. Full patent descriptions contain much more information than is presented here (e.g. claims, references, figures, diagrams, etc.). We will tell you how to obtain this information later in the chapter. The following is an

⁸Adapted from the United States Patent and Trademark Office:
<http://www.uspto.gov/web/offices/pac/doc/general/whatis.htm>.

example of the type of information that you can expect to obtain from a patent search on food additives:

- **Composition for increasing protein concentration in a mammal**

Inventor(s): Beale; Paxton K. (1801 Bush St. Suite 300, San Francisco, CA 94109), Nickey; Donald O. (Plain City, OH)

Assignee(s): Beale; Paxton K. (san Francisco, Ca)

Patent Number: 5,889,040

Date filed: October 16, 1997

Abstract: The present invention is based in part upon the discovery that the use of pyruvate in enteral formulations, in combination with an anabolic protein composition, produces a synergistic effect in increasing the lean body mass or muscle tissue of a mammal consuming same. The present invention also provides a method for enhanced endurance of athletes. The present invention relates generally to a composition for enhancing the protein concentration or muscle mass of a mammal and a method for enhancing the protein concentration or muscle mass in a mammal. More specifically, the present invention relates to a composition which comprises pyruvate and/or derivatives of pyruvate and an anabolic protein composition. The method of the present invention comprises administering to a mammal in need of enhancing its protein concentration or muscle mass, a composition comprising pyruvate and an anabolic protein composition. The pyruvate/anabolic protein composition can take the form of powders, liquids, pills, capsules, tablets, **food additives**, candies or confections.

Excerpt(s): The present invention relates generally to a composition for and method of enhancing the protein concentration or muscle mass of a mammal. More specifically, the present invention relates to a composition which comprises pyruvate and/or derivatives of pyruvate and a novel blend of proteins and/or amino acids that possesses an amino acid profile that is similar to the amino acid profile of human muscle tissue. The method of the present invention comprises administering to a mammal in need of enhancing its protein concentration or muscle mass, a composition comprising pyruvate and a source of amino nitrogen having specific types and levels of amino acids. The method of this invention results in a synergistic increase of muscle mass while at the same time lowering the deposition of body fat. Athletes engage in strenuous training to accomplish the goals of their sport. This strenuous training essentially amounts to trauma to the body, in that the human body interprets every strenuous work-out as a threat to its survival. It is known that muscle damage, caused by training, releases the catabolic hormone prostaglandin-E₂. Training also causes the release of adrenocorticotropin (ACTH), which is a pituitary hormone. The presence of increased levels of ACTH increases the production of the catabolic hormone cortisol. Cortisol is also known as hydrocortisone, which is a glucocorticoid of the adrenal cortex that is a derivative of cortisone and is used in the treatment of rheumatoid arthritis. Thus, cortisol is a naturally occurring anti-inflammatory steroid. This catabolic hormone results in the release of amino acids from muscle tissue and prevents absorption of glucose. Cortisol, as a catabolic stress hormone, cannibalizes muscle tissue. High cortisol levels also result in the breakdown of connective tissue, lowered immunity and reduced muscle RNA synthesis. While cortisol may be a detriment to the athlete, scientists have conjectured that when the human body is stressed or traumatized, it triggers a "fight or flight" survival response. The biological design of cortisol is such that when a human is threatened, cortisol levels rise and mobilize the body for action by breaking down fat

and muscle stores for emergency energy. Cortisol also reduces swelling in the event of injury. After the threat or trauma has subsided, cortisol levels return to normal. The cortisol-stress relationship is designed for intermittent physical threats and not the constant stimulation provided by today's aggressive athletes. Ongoing training results in cortisol levels that do not return to normal for extended periods of time and thereby result in the breakdown or loss of muscle tissue. After strenuous exercise, muscle tissue enters a stage of rapid nitrogen absorption in the form of amino acids and small peptides in order to rebuild the muscle fibers, grow and add new muscle fibers. During this period of repair and growth, it is important that the muscle cells have available to them sufficient levels of nitrogen in the form of amino acids. While the total level of amino nitrogen is important, the ratios of the various amino acids is even more important.

Web site: http://www.delphion.com/details?pn=US05889040__

- **Gel-forming polypeptide derivatives**

Inventor(s): Janmey; Paul A. (Arlington, MA), Vegners; Rolands (Riga, LV)

Assignee(s): Brigham & Women's Hospital (Boston, MA)

Patent Number: 5,955,434

Date filed: August 9, 1996

Abstract: The invention relates to N-terminal Fmoc-protected peptide combinations that form gels in water and diverse organic solvents, and whose representative overall formulas are: (I), where $R_{sup.1}$ is $CH_{sub.3}$, $CH_{sub.2}-CH(CH_{sub.3})_{sub.3}$, $CH(CH_{sub.3})CH_{sub.2}CH_{sub.3}$, $R_{sup.2}$ is H, $CH_{sub.3}$, $CH_{sub.2}OH$, $(CH_{sub.2})_{sub.n}-COOH$, $(CH_{sub.2})_4-NH-CO-OCH_{sub.2}C_{sub.6}H_{sub.5}$, $R_{sup.3}$ is dipeptide remainder, m is 0 or 1 and, n is 1 or 2; or (II), where R_1 is $CH_{sub.3}$, $CH_{sub.2}-CH(CH_{sub.3})_2$, or $CH(CH_{sub.3})CH_{sub.2}CH_3$, R_2 is $CH_2-CH(CH_3)_2$, R_3 is H, $CH_{sub.3}$, $CH_{sub.2}OH$, $(CH_{sub.2})_{sub.n}-COOH$, or $(CH_{sub.2})_4-NH-CO-OCH_{sub.2}C_{sub.6}H_{sub.5}$, $R_{sub.4}$ is tripeptide remainder, m is 0 or 1 and, n is 1 or 2. These types of peptides form gels in aqueous solutions and are biologically compatible and may be useful for drug delivery, antigen delivery and may be useful as **food additives** to retard spoilage and act as fillers.

Excerpt(s): The invention comprises a series of chemically synthesized low molecular weight peptides that form gels in water or organic solvents, as well as the gels so formed. The molecular structure of these gels can be exploited for new materials, stereocatalytic matrices and micelle preparation for research, medical, cosmetic, and food product applications. Gels formed by biocompatible materials have many applications in medicine and industry, but have been limited by the need for high molecular weight compounds, high concentrations of polymer, or organic solvents to form the gels. It would be desirable to synthesize gels that form in aqueous solutions at low concentrations of simple polymers. A gel consists of continuous networks of molecular aggregates in which solvent molecules are trapped. The gel phase requires stereochemical correspondence between these small molecules in order to generate cohesion. Low molecular weight molecules that form macroscopic gels may do so by a variety of microscopic packings including linear aggregates, micelles, and other structures. Components responsible for the mechanical elasticity of gels may be joined by fragile non-covalent bonds, yielding materials with mechanical properties suitable for pastes or spreads with many cosmetic or therapeutic applications.

Web site: http://www.delphion.com/details?pn=US05955434__

- **Heavy metal chelating agent for oral administration, its synthesis and its uses in medicine and health protection**

Inventor(s): Li; Xingwei (Sichuan, CN), Mo; Taigang (Sichuan, CN), Peng; Shiqi (Sichuan, CN), Wang; Chao (Sichuan, CN), Wu; Yancheng (Sichuan, CN), Zhao; Ming (Sichuan, CN)

Assignee(s): Sichuan Research Institute of Nature Drugs (sichuan, Cn)

Patent Number: 6,306,837

Date filed: December 28, 1999

Abstract: The present invention relates to a new kind of heavy metal chelating agents and a preparation process and uses thereof. The said heavy metal chelating agents are expressed in.alpha.-[D(+)]glucose-1-yl-amino]-.beta.3-mercapto-(S)-propanoic acid (abbreviated to NGP,I) and/or N,N'-di[D(+)]glucose-1-yl]-L-cystine (abbreviated to NGCD,II). In the process of preparation, glucose and cysteine are reacted with a base, with a reducing agent, and the obtained products are acidified to give NGP,I, which can be used in and/or as drugs, health foods and **food additives** for accelerating the excretion of heavy metals including Pb, Cd, Hg, Al, Sb, As, etc. The structural feature of the compounds of the present invention is that they contain glucose and cysteine in their molecules. Compared with the heavy metal-excreting drugs of prior art, the compounds of the present invention have four advantages, namely suitability for oral administration, high ability to accelerate the excretion of heavy metals, high selectivity and less toxicity.

Excerpt(s): The present invention relates to a heavy metal chelating agent, in particular a new kind of oral heavy metal chelating agents comprising glucose as kinetophore and cysteine as pharmacophore, the preparation process and uses thereof. Heavy metals, typically lead, are harmful to human body. Human beings are always affected in various ways by a variety of heavy metal pollution in daily life. For example, lead pollution exists in almost all the vivosphere of human beings, including atmospheric pollution, potable water pollution and soil pollution. Such pollution sources are introduced into human body while people take in food, inhale air, drink water and smoke, and are assimilated, then dispersed and stored in important organs, resulting in disturbing normal metabolism and poisoning. Ninety percent of lead introduced into human body disperses in the bones. The half-life period of lead in vivo is about 1460 days. Recent research indicates that intracellular lead binds to organelle and protein. The binding is observed namely at mercapto group (-SH) of protein. The amount of the accumulated lead in vivo is increasing with age. Chronic accumulation of lead in vivo leads to changes in normal physiological function of human body. While acute lead-poisoning population mainly spreads in industrial regions where lead vapor and smoke dust are discharged, waste gas containing lead from motors affects residents in cities by chronic lead poisoning. While children casually suffer from lead poisoning due to unwittingly taking in the peeling-off paint (from toys, furniture, wall and soil, etc.) Containing lead, porcelain tableware containing lead makes anyone suffer from chronic lead poisoning.

Web site: http://www.delphion.com/details?pn=US06306837__

- **Solid lipid compositions of lipophilic compounds for enhanced oral bioavailability**

Inventor(s): Amselem; Shimon (Rehovot, IL)

Assignee(s): Pharmos Ltd. (rehovot, Il)

Patent Number: 5,989,583

Date filed: April 2, 1997

Abstract: Lipophilic substances of poor oral bioavailability are mixed with at least one solid fat and phospholipid to obtain a dried solid composition suitable as an oral dosage form. The solid lipid compositions are exemplified for **food additives** or dietary supplements such as Coenzyme Q10 and for pharmaceuticals such as dexamethasone. The Coenzyme Q10-dry lipid mixtures shows improved drug release in vitro and enhanced oral bioavailability in vivo compared to a commercial CoQ10 formulation. The dexamethasone-dry lipid mixture similarly shows greatly enhanced oral bioavailability compared to known formulations.

Excerpt(s): The present invention concerns compositions comprising dry lipid mixtures of lipophilic compounds and to methods for the preparation and use of these compositions. Lipophilic substances possessing low water solubility often have poor oral bioavailability. These compounds, being hydrophobic by nature, show wetting difficulties and poor dissolution. These properties obviously represent a rate-limiting step in their absorption from solid oral dosage forms and, in turn, cause a subsequent reduction in their bioavailability. To address the foregoing issues, these lipophilic substances are usually administered in the form of liquid preparations dissolved in edible oils or formulated in oil-in-water emulsions or microemulsions. Even in these formulations, however, the oral bioavailability of many of them is still very low. Thus, even today, there remains an unresolved need to provide safe and useful formulations that provide enhanced oral bioavailability for such substances.

Web site: http://www.delphion.com/details?pn=US05989583__

- **Use of nanoscale sterols and sterol esters**

Inventor(s): Biermann; Manfred (Cincinnati, OH), Christophliemk; Peter (Duesseldorf, DE), Dolhaine; Hans (Glehn, DE), Fabry; Bernd (Korschenbroich, DE), Kropf; Christian (Duesseldorf, DE), Schroeder; Christine (Duesseldorf, DE)

Assignee(s): Cognis Deutschland GmbH (duesseldorf, De)

Patent Number: 6,352,737

Date filed: June 20, 2000

Abstract: The invention relates to the use of nanoscale sterols and/or sterol esters with particle diameters of 10 to 300 nm as **food additives** and as active substances for the production of hypocholesterolemic agents. The particular fineness of the particles promotes more rapid absorption by the blood serum after oral ingestion by comparison with conventional sterols and sterol esters.

Excerpt(s): Sterols and sterol esters are important raw materials both for cosmetics and pharmaceutical products and for the food industry. For example, it is known that sterols, especially vegetable representatives ("phytosterols"), are incorporated in the basal membrane of the skin and pass to the skin surface through the differentiation of the skin cells. This would explain the caring and protecting effect of phytosterols in skin cosmetics. The topical application of sterols also leads to an increased skin moisture

level and to an increased lipid content. This improves the desquamation behavior of the skin and reduces erythemas which may be present. Generic discussions regarding properties of certain sterols and sterol esters used in cosmetics have been published, (R. Wachter, *Parf. Kosm.*, Vol. 75, p. 755 (1994) and R. Wachter, *Cosm. Toil.*, Vol. 110, p. 72 (1995)). Another important property of phytosterols and, above all, of phytosterol esters is their hypocholesterolemic effect, i.e., their ability after oral ingestion, for example as a margarine additive, to significantly reduce cholesterol levels in the blood. This property was described as long ago as 1953 (Peterson, et al., *J. Nutrit.* Vol. 50, p. 191 (1953)). U.S. Pat. Nos. 3,089,939 and 3,203,862, in addition to German Patent Publication No. DE 20 35 069 (Procter & Gamble), point in the same direction. The active substances are normally added to cooking oils or edible oils and are then taken up through the food. However, the quantities used are generally small and are normally below 0.5% by weight, to prevent the edible oils from clouding or the sterols from precipitating when water is added. The incorporation of sitostanol esters in margarine, butter, mayonnaise, salad creams and the like to reduce the blood cholesterol content is proposed in International Patent Publication No. WO 92/19640 (Raision). Reference is also made in this connection to German Patent Publication No. DE-A1 197 00 796 (Henkel). The effect of sterols and sterol esters is usually associated with the rate at which the compounds are absorbed. So far as the substances available at present are concerned, there is considerable potential for improvement in this regard. Thus, there is a need in the art to accelerate the absorption of orally administered sterols and sterol esters.

Web site: http://www.delphion.com/details?pn=US06352737__

- **Use of spray-dried and freeze-dried sugarcane leaf essence**

Inventor(s): Bolen; Paul L. (Middletown, NJ), Davidson; Richard H. (Whitehouse Station, NJ), Hawn; Regina D. (Matawan, NJ), Miller; Kevin P. (Middletown, NJ), Pittet; Alan Owen (Colts Neck, NJ), Rossy; Phillip A. (Hillsdale, NJ), Schulman; Marvin (Howell, NJ), Warder; Ira T. (Monmouth Beach, NJ)

Assignee(s): International Flavors & Fragrances Inc. (new York, Ny)

Patent Number: 6,251,193

Date filed: April 17, 2000

Abstract: Described are flavored calcium supplement compositions, beverage (e.g., coffee, milk, cocoa and citrus/whey protein), foodstuff, chewing gum and oral care (e.g., toothpaste and mouthwash) compositions and articles comprising flavored calcium supplements, foodstuff, beverage, chewing gum and oral care base compositions and intimately admixed therewith an aroma or taste augmenting, enhancing or imparting quantity and concentration of one or more freeze-dried or spray-dried tastand compositions containing tastands produced from *Saccharum officinarum* leaves (sugarcane leaves) by means of carrying out one or more physical separation unit operations on a plurality of such leaves, macerates thereof or mixtures of leaves and macerates thereof whereby one or more natural **food additives**, chewing gum additives or oral care additives is separated and isolated from the remainder of the plurality of leaves, macerates thereof or mixtures of leaves and macerates thereof. Such unit operations include pressurization using hydraulic press means, steam distillation, fractional distillation, supercritical carbon dioxide extraction, volatile solvent extraction and/or charcoal column separation means.

Excerpt(s): whereby a freeze-dried or spray-dried natural tastand, which is a flavored calcium supplement composition additive or a foodstuff, beverage, chewing gum or oral

care additive, is separated and isolated from the remainder of said plurality of *Saccharum officinarum* leaves, macerates thereof or mixtures of leaves and macerates thereof. The liquid tastand is spray-dried or freeze-dried using procedures well known to those having ordinary skill in the art. The physical separation unit operations include but are not limited to steam distillation; high pressure extraction, for example, using one or more screw presses; pervaporation; extraction using an extraction column such as a charcoal extraction column; standard fractional distillation, batch or continuous; high pressure, volatile solvent extraction; and super critical carbon dioxide extraction. Our invention also relates to processes for augmenting, enhancing or imparting flavors in or to calcium supplements (e.g., calcium glycerophosphate), foodstuffs, chewing gums and beverages by adding thereto the aforementioned freeze-dried or spray-dried tastands taken alone or combined with a solid water-soluble carrier (as prepared using spray drying or freeze drying process steps) and other additives, including nutritional supplements such as calcium glycerophosphate. Foodstuffs, chewing gums, oral care compositions, calcium supplement compositions and beverages, which are sweetened with sweeteners other than natural sugars or which contain sodium chloride replacers, for example foodstuffs, beverages, chewing gums, toothpastes, mouthwashes, calcium supplements and beverages which contain potassium chloride and/or L-aspartyl-L-phenylalanine ethyl ester and/or saccharin and/or sucralose have been made the subject of intensive research efforts whereby the bitter or metallic taste of the eatable, chewing gum or oral care composition is covered or "improved." Thus, for example, U.S. Pat. No. 5,639,788 assigned to Bioresearch, Incorporated discloses a composition comprising (a) an eatable having a bitter and/or metallic taste and (b) at least one tastand selected from L-aspartyl-L-phenylalanine, L-aspartyl-L-tyrosine and their salts in a substantially tasteless amount of 0.0000001-300 weight percent based on the weight of the eatable. U.S. Pat. No. 5,639,788 indicates that the eatable is bitter tasting potassium chloride, an amirto acid, a peptide, a polypeptide, or a protein or N-l.alpha.-aspartyl-l-phenylalanine ethyl ester. It is further indicated in U.S. Pat. No. 5,639,788 that the eatable is any ingested material taken by humans, animals and the like and may be a foodstuff, non-calorie food component (e.g., flavoring or medicine including bitter chocolate or a drug such as ibuprofen). The tastand is indicated in U.S. Pat. No. 5,639,788 to be incorporated in or ingested with an eatable and can prevent bitter components from interacting with the mammalian taste receptor. Use of the tastand is indicated in U.S. Pat. No. 5,639,788 to allow reformulation for low-calorie or low-sodium foods. From a reading of such documents as U.S. Pat. No. 5,639,788, it has become apparent that there exists a need to provide improvement of bitter or metallic taste of such eatables containing such materials as potassium chloride, sucrolose, saccharin and L-aspartyl-L-phenylalanine ethyl ester using natural substances.

Web site: http://www.delphion.com/details?pn=US06251193__

- **Wax esters enriched in.omega.-3 unsaturated fatty acids, their preparation and their use**

Inventor(s): Tacconi; Maria Teresa (Milan, IT)

Assignee(s): Prime European Therapeutics S.p.a. ()

Patent Number: 6,274,751

Date filed: March 14, 2000

Abstract: This invention refers to wax esters enriched in.omega.-3 unsaturated fatty acids, to the procedure to obtain them, to their peculiar biochemical behavior which

enables them to be used as drug and **food additives**, and to formulations which contain them for both pharmaceutical and dietetic-alimentary purposes.

Excerpt(s): This invention refers to wax esters enriched in.omega.-3 unsaturated fatty acids, to the procedure to obtain them, to their peculiar biochemical behaviour which enables them to be used as drug and **food additives**, and to formulations which contain them for both pharmaceutical and dietetic-alimentary purposes. The name "wax" usually means a wide class of lipids, which are characterized more according to their physical feature than according to their chemical structure. Generally, a material is classified as a wax when it looks like honeycomb material. On the contrary, from a strictly chemical point of view, waxes are particular carboxylic esters (wax esters). Namely, they are esters of long chain aliphatic acids (fatty acids) with long chain aliphatic alcohols. Both acids and alcohols can be either saturated or unsaturated. A full description of nature and characteristics of wax esters can be found in a review by P. E. Kolattukudy, "Chemistry and Biochemistry of Natural Waxes", Elsevier (1976), Amsterdam.

Web site: http://www.delphion.com/details?pn=US06274751__

Patent Applications on Food Additives

As of December 2000, U.S. patent applications are open to public viewing.⁹ Applications are patent requests which have yet to be granted. (The process to achieve a patent can take several years.) The following patent applications have been filed since December 2000 relating to food additives:

- **NOVEL ADHERENCE FACTORS OF NON PATHOGENIC MICROORGANISMS AND APPLICATIONS THEREOF FOR SCREENING MICROORGANISMS FOR SPECIFIC PROBIOTIC PROPERTIES; NOVEL PHARMACEUTICAL COMPOSITIONS AND FOOD ADDITIVES COMPRISING SUCH MICROORGANISMS AND ADHERENCE FACTORS**

Inventor(s): CONWAY, PATRICIA LYNNE; (LE PEROUSE NSW, AU), LEER, ROBERT JAN; (VOORBURG, NL), POWWELS, PIETER HENDRIK; (RIJSWIJK, NL)

Correspondence: Young & Thompson; 745 South 23rd Street 2nd Floor; Arlington; VA; 22202

Patent Application Number: 20010018048

Date filed: September 30, 1998

Abstract: A protein obtainable from a non pathogenic microorganism, said protein having mucosa binding promoting activity and a molecular weight of 20-40 kD is disclosed. Application of such a protein or a peptide derived therefrom in a method of screening non pathogenic microorganisms for a microorganism capable of specifically binding mucosa, said method comprising detection in a manner known per se of the presence of a particular protein on or in a microorganism or in a culture of microorganisms, said particular protein being the already defined protein. Kits suitable for such a screening method are also disclosed. Use of a component selected from the group of components comprising a protein or peptide as defined; an expression vector comprising nucleic acid encoding such protein or peptide; a recombinant

⁹ This has been a common practice outside the United States prior to December 2000.

microorganism or a part of said microorganism expressing such protein or peptide, said part expressing mucosa binding promoting activity; a non pathogenic microorganism capable of expressing such protein or peptide or a part of said microorganism, said part expressing mucosa binding promoting activity as pharmaceutically active component in a pharmaceutical composition for prophylaxis and/or treatment of disease or illness associated with a mucosa colonizing pathogenic microorganism. Use of such components as **food additive** and compositions comprising such components are described.

Excerpt(s): This invention relates to the screening of bacteria, in particular non pathogenic bacteria for those bacteria that can adhere to specific sites of the mucosa called receptors. More specifically the invention is directed at screening of non pathogenic Gram positive bacteria in particular lactic acid bacterial (LAB) species, more in particular bacteria of the genera Lactobacillus and Bifidobacterium. A preference is expressed for screening bacteria indigenous to farm animals, pets and humans. The invention comprises a method of screening for a particular group of adherence factors of the non pathogenic bacteria not previously recognised. In particular the adherence factors e.g. of Lactobacilli are of interest. This novel group of adherence factors of non pathogenic bacteria comprises proteins that are structurally related to virulence factors of certain classes of pathogenic microorganisms. The invention also relates to the application of bacteria obtainable via the screening method of the invention, in particular to Lactobacilli producing said adherence factors, application of the adherence factors as such, application of parts of the bacteria and application of parts of an adherence factor from the novel group for various pharmaceutical applications. Such application may comprise the treatment or prophylaxis of infections of the gastro-intestinal tract, the respiratory tract, urogenital tract, the oral cavity or any other part of the body in particular any internal part of the body that can be colonised by pathogenic microorganisms.

Web site: <http://appft1.uspto.gov/netahtml/PTO/search-bool.html>

- **Novel substituted aryl alkenoic acid heterocyclic amides**

Inventor(s): Handa, Sukhdev Swami; (Jammu, IN), Koul, Jawahir Lal; (Jammu, IN), Koul, Surrinder; (Jammu, IN), Moza, Beenu; (Jammu, IN), Taneja, Subhash Chandra; (Jammu, IN)

Correspondence: Nath & Associates PLLc; Sixth Floor; 1030 15th Street, N.W.; Washington; DC; 20005; US

Patent Application Number: 20030161860

Date filed: February 7, 2002

Abstract: The present invention relates to novel compounds possessing specific hot, pungent and spicy taste when subjected to direct pungency evaluation, which may be useful as **food additives** and anti-oxidants, however the said compounds do not add to any nutritional value but the synthesised compounds can possess useful pharmacological properties which is expected to find application in new test models for the development of anti-inflammatory drugs, bioavailability enhancers and for the study of hepatic drug metabolising mechanism; also relates to a process for preparing the said compounds.

Excerpt(s): Aroma, flavour and taste are considered to be the three important parameters for determining the quality of spices or condiments. The aroma and flavour

of a spice depends upon the presence of volatile components, which are perceived through the olfactory epithelium present in the nose. The olfactory substances are primarily mono-, sesqui- or diterpenes, low molecular weight hydrocarbons, heteroacyclic or heterocyclic compounds. The taste is perceived by the taste buds present on the surface of the tongue. The interactions between the pungent molecules and receptors present on the surface of the tongue are the main cause of generation of hot sensation or thermogenecity which is associated with pungency. More pungent the substance, more is the duration of the feeling of hotness. This feeling of hotness may also be perceived on other tender parts of the skin. Most of the known natural pungent substances are aromatic in nature. Some of the most commonly known natural pungent substances include piperamides such as piperine from black pepper (*Piper nigrum*), capsaicinoids such as capsaicin and dihydro-capsaicin from red chillies (*Capsicum annum*) and gingeroids like gingerol from ginger (*Zingiber officianalis*) etc. The chemistry and properties of pungent compounds from natural sources has recently been reviewed (Nakatani, Nobugi; Koryo, 1995, 185, p 59-64, Chem. Abs. 123, 5520 n). These pungent principles which possess anti-oxidant properties are also associated with many physiological actions viz piperamides, capsaicinoids as well as gingeroids are reported to possess anti-inflammatory properties (Lewis, D. A. in Anti-inflammatory drugs from plant and marine sources; Birkhauser Verlag, Berlin, 1989, p 216-220; Janusz, J. M., J. Med. Chem. 1993, 36, p 2595). Both piperine and dihydrocapsaicin were found to interact irreversibly with hepatic drug metabolizing enzymes thereby inhibiting their activity as indicated by prolongation of pentobarbital sleeping time in rats (Sush Young-Joon, A, et al., Life sciences, 1995, 56(16), p 305-311; Atal, C. K. et al., J. Pharmacol. Exp. Therp. 1985, 232, p 258-262). Only few reports have appeared in the literature related to the evaluation of structure with respect to pungency. Wilbur Scoville developed direct subjective method of analysis of capsaicin and related extracts for their pungency evaluation in 1912. In this method potency of pepper was measured as heat units by diluting the extracts until pungency was just detected after placing a drop on the tongue. Pure capsaicin was thus assigned 10^{sup.7} units and jalapeno 10^{sup.3} units (Scoville, W. J., Am. Pharm. Assoc. 1912, 1, p 453-454). Indirect evaluations of pungency through the measurement of physiological effects have also been employed. For example Watnabe et al. reported the assessment of pungency related thermogenecity to structure of capsaicin analogues by correlating it with adrenal catecholamine secretion in rats (Watnabe, Tatsno et al. Life. Sci., 1994, 54(5), p 369-374; Chem. Abs., 120: 94792f). Astringent and pungent substances were studied using a multichannel taste sensor by observing the changes in electric potential in lipid membranes. However pungent substances were found to have no effect on the membrane potentials (Iiyama, Satoru et al., Chem. Senses, 1994, 19(1), p 87-96; Chem. Abs. 120: 295156).

Web site: <http://appft1.uspto.gov/netahtml/PTO/search-bool.html>

- **Plasmid originated from bifidobacterium, recombinant expression vector using the plasmid and transformation method**

Inventor(s): Ji, Geun-Eog; (Seoul, KR), Kang, Yun-Hee; (Seoul, KR), Park, Myeong-Soo; (Seoul, KR), Seo, Jung-Min; (Seoul, KR)

Correspondence: Foley And Lardner; Suite 500; 3000 K Street NW; Washington; DC; 20007; US

Patent Application Number: 20040014221

Date filed: October 24, 2002

Abstract: The present invention relates to a new plasmid originated from (Bifidobacterium) a recombinant expression vector and transformation method using the same. More particularly, the present invention relates to a plasmid pMG1 having nucleotide sequence represented by SEQ.ID.NO. 1; (Bifidobacterium longum) MG1 including the plasmid pMG1; and a shuttle vector which can be replicated in both (Bifidobacterium) and (E. coli), and comprises (Mob) gene having nucleotide sequence represented by SEQ.ID.NO. 2. (Rep) gene having nucleotide sequence represented by SEQ.ID.NO. 3 and a selection marker. The shuttle vector and the promoter of the present invention can be used for expressing target gene without additional purification process. The protein expressed from the target gene in (Bifidobacterium) can be added to food, therefore, the protein can be used for preparing **food additives** or oral vaccine. Furthermore, the potential and the possibility of probiotics using (Bifidobacterium) can be promoted through the development of the shuttle vector.

Excerpt(s): The present invention relates to a new plasmid originated from Bifidobacterium, a recombinant expression vector and a transformation method using the same. More particularly, the present invention relates to a plasmid pMG1 having a nucleotide sequence represented by SEQ ID NO: 1; Bifidobacterium longum MG1 containing the plasmid; and a shuttle vector that is replicated in both Bifidobacterium and E. coli and comprises a Mob gene having a nucleotide sequence represented by SEQ ID NO: 2, a Rep gene having a nucleotide sequence represented by SEQ ID NO: 3 and a selection marker. Human intestines contain various microorganisms propagating therein, composing normal intestinal flora. Composition and activity of such intestinal flora may widely influence nutrition, bio-functionality, drug efficiency, carcinogenesis, aging, immune responses, resistance to infection, and the body's responses to other stresses as well as health of animal and human, in positive manners. The intestinal flora comprises more than 500 different species. A relatively small number of bacteria reside in the stomach and the upper part of the small intestine, while increasing in number in the large intestine. As described above, the intestinal flora offers positive effects on human health. It is known that Bifidobacterium sp. in normal intestinal flora is of high importance. Such a fact can be inferred by observing that Bifidobacterium sp. inhabits the large intestine of humans, throughout their entire lives. Also, it was revealed that breast-fed infants have a larger number of Bifidobacterium sp. than bottle-fed infants, leading to the breast-fed infants having a lower occurrence of diarrhea. However, it is known that the number of Bifidobacterium sp. is rapidly decreased with aging. Distribution of the normal intestinal flora in humans changes depending on diverse factors such as age, race, living environments, diet, etc. The diet especially may have big effects on the normal intestinal flora. Reportedly, people living a healthy long life or people with low incidence of adult diseases have a large number of intestinal Lactobacillus, compared to other people. For this reason, the importance of selecting foods to elevate well-balanced distribution of the intestinal flora is rising. With an aim of obtaining well-balanced distribution of the intestinal flora by ingesting Lactobacillus strains, active studies for development of food products prepared by adding Lactobacillus to conventional dairy products, including yogurts, are underway.

Web site: <http://appft1.uspto.gov/netahtml/PTO/search-bool.html>

- **Use of hydroxymatairesinol for prevention of cancers, non-cancer, hormone dependent diseases and cardiovascular diseases by hydroxymatairesinol, and a pharmaceutical preparation, food additive and food product comprising hydroxymatairesinol**

Inventor(s): Ahotupa, Markku; (Turku, FI), Eckerman, Christer; (Turku, FI), Kangas, Lauri; (Raisio, FI), Makela, Sari; (Turku, FI), Saarinen, Niina; (Turku, FI), Santti, Risto; (Naantali, FI), Warri, Anni; (Lieto, FI)

Correspondence: James C. Lydon; Suite 100; 100 Daingerfield Road; Alexandria; VA; 22314; US

Patent Application Number: 20010016590

Date filed: April 11, 2001

Excerpt(s): This invention relates to methods for prevention of cancers, certain non-cancer, hormone dependent diseases and/or cardiovascular diseases in a person, based on administering of hydroxymatairesinol to said person. The invention also concerns a method for increasing the level of enterolactone or another metabolite of hydroxymatairesinol in a person's serum thereby causing prevention of a cancer or a certain non-cancer, hormone dependent disease in a person, based on administering of hydroxymatairesinol to said person. Furthermore, this invention relates to pharmaceutical preparations, **food additives** and food products comprising hydroxymatairesinol. The publications and other materials used herein to illuminate the background of the invention, and in particular, cases to provide additional details respecting the practice, are incorporated by reference. Lignans are defined as a class of phenolic compounds possessing a 2,3-dibenzylbutane skeleton. They are formed by coupling of monomeric units called precursors such as cinnamic acid, caffeic, ferulic, coumaric, and gallic acids (Ayres and Loike, 1990). Lignans are widely distributed in plants. They can be found in different parts (roots, leafs, stem, seeds, fruits) but mainly in small amounts. In many sources (seeds, fruits) lignans are found as glycosidic conjugates associated with fiber component of plants. The most common dietary sources of mammalian lignan precursors are unrefined grain products. The highest concentrations in edible plants have been found in flaxseed, followed by unrefined grain products, particularly rye. Mammalian lignan production from different plant food are given in Table 1. Considerable amounts of lignans are also found in coniferous trees. The type of lignans differs in different species and the amounts of lignans vary in different parts of the trees. The typical lignans in heart wood of spruce (*Picea abies*) are hydroxymatairesinol (HMR), α -conidendrin, conidendrinic acid, matairesinol, isolariciresinol, secoisolariciresinol, liovile, picearesinol, lariciresinol and pinoresinol (Elknan 1979). The far most abundant single component of lignans in spruce is HMR, about 60 per cent of total lignans, which occurs mainly in unconjugated free form. Lignan concentration in thick roots is 2-3 per cent. Abundance of lignans occur in the heart wood of branches (5 - 10 per cent) and twists and especially in the knots, where the amount of lignans may be higher than 10 per cent (Ekman, 1976 and 1979). These concentrations are about hundred-fold compared to ground flax powder known as lignan-rich material.

Web site: <http://appft1.uspto.gov/netathtml/PTO/search-bool.html>

Keeping Current

In order to stay informed about patents and patent applications dealing with food additives, you can access the U.S. Patent Office archive via the Internet at the following Web address: **<http://www.uspto.gov/patft/index.html>**. You will see two broad options: (1) Issued Patent, and (2) Published Applications. To see a list of issued patents, perform the following steps: Under "Issued Patents," click "Quick Search." Then, type "food additives" (or synonyms) into the "Term 1" box. After clicking on the search button, scroll down to see the various patents which have been granted to date on food additives.

You can also use this procedure to view pending patent applications concerning food additives. Simply go back to **<http://www.uspto.gov/patft/index.html>**. Select "Quick Search" under "Published Applications." Then proceed with the steps listed above.

CHAPTER 5. BOOKS ON FOOD ADDITIVES

Overview

This chapter provides bibliographic book references relating to food additives. In addition to online booksellers such as **www.amazon.com** and **www.bn.com**, excellent sources for book titles on food additives include the Combined Health Information Database and the National Library of Medicine. Your local medical library also may have these titles available for loan.

Book Summaries: Federal Agencies

The Combined Health Information Database collects various book abstracts from a variety of healthcare institutions and federal agencies. To access these summaries, go directly to the following hyperlink: <http://chid.nih.gov/detail/detail.html>. You will need to use the "Detailed Search" option. To find book summaries, use the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer. For the format option, select "Monograph/Book." Now type "food additives" (or synonyms) into the "For these words:" box. You should check back periodically with this database which is updated every three months. The following is a typical result when searching for books on food additives:

- **Against the Grain: The Slightly Eccentric Guide to Living Well Without Gluten or Wheat**

Source: New York, NY: Henry Holt and Company, Inc. 1995. 291 p.

Contact: Available from Celiac Disease Foundation. 13251 Ventura Boulevard, Suite 3, Studio City, CA 91604-1838. (818) 990-2354. Fax (818) 990-2379. PRICE: \$22.50 plus \$3 shipping and handling per copy (as of 1995). ISBN: 0805036245.

Summary: This book presents a light-hearted guide to following a gluten-free diet. Beginning with introductory essays by two gastroenterologists who explore the symptoms, diagnoses, and management of gluten intolerance and wheat allergy, the book provides 12 chapters on a wide variety of related topics. Topics include basic rules for safe shopping and eating; **food additives**; where to find appropriate products; attitude and coping issues; mail-order delivery; eating at restaurants; ethnic foods;

travel; maintaining a special diet; special recipes; and growing up wheat-and gluten-free. The final chapter provides an extensive resource guide, and a reading list. An appendix provides wheat allergy and gluten intolerance explanation cards that can be photocopied and carried while traveling; the cards are provided in English and 13 other languages.

- **Wheat-Free, Gluten-Free Dessert Cookbook**

Source: Cuyahoga Falls, OH: Connie Sarros. 2000. 94 p.

Contact: Available from Connie Sarros. 3270 Camden Rue, Cuyahoga Falls, OH 44223. (330) 929-1651. E-mail: gfcookbook@hotmail.com. Website: www.glutenfree.homestead.com/homepage.html. PRICE: \$15.95 plus shipping and handling. ISBN: 0615116221.

Summary: This dessert cookbook offers guidelines and recipes for people following a wheat free, gluten free diet. Celiac disease (gluten intolerance) is a chronic disease in which the water soluble protein component in grains (gluten) creates an immune reaction in the small intestine. Once the immune system is activated in this response, there is progressive destruction of the intestinal surface cells that are normally responsible for nutrition absorption. Gluten is found in most cereal grains, primarily wheat, barley, eye, and oats. The cookbook offers introductory material that briefly reviews gluten intolerance, then provides hints for successful gluten free baking (using alternative flours). The introduction also offers explanations and definitions of terms, a listing of general foods that are acceptable for someone following a gluten free diet, and a list of gluten free **food additives**. Recipes are then provided in nine categories: cakes (including cake rolls and caking fillings and toppings), cookies, fruit desserts, ice cream desserts, low calorie desserts, miscellaneous desserts (including cheesecakes), pie crusts, pies, and puddings. Each recipe includes ingredients, directions, and a comment or suggestion on making the item; nutritional information is not provided. A subject index concludes the cookbook.

- **Pediatric Nutrition Handbook. 3rd ed**

Source: Elk Grove Village, IL: American Academy of Pediatrics. 1993. 472 p.

Contact: Available from American Academy of Pediatrics. P.O. Box 927, 141 Northwest Point Boulevard, Elk Grove Village, IL 60009-0927. (800) 433-9016. PRICE: \$47.95 (members) plus \$6.25 shipping and handling; \$52.95 for nonmembers; plus \$8.95 shipping and handling. ISBN: 0910761388.

Summary: This handbook serves as a ready desk reference on the nutritional requirements and impact of nutritional status on the health of infants, children, and adolescents. Thirty-five chapters cover breastfeeding; formula feeding of term infants; supplemental foods for infants; vitamin and mineral supplement needs of healthy children in the United States; feeding from age 1 year to adolescence; adolescent nutrition; the nutritional needs of preterm infants; energy; proteins; carbohydrate and dietary fiber; fats and fatty acids; calcium, phosphorus, and magnesium; trace elements; vitamins; infant nutrition and the development of gastrointestinal function; parenteral nutrition; nutrition and oral health; community nutrition services for children; current legislation and regulations regarding infant formulas; assessment of nutritional status; failure to thrive; gastrointestinal disease, chronic diarrhea, and malabsorption; oral fluid therapy and posttreatment feeding after enteritis; iron deficiency; inborn errors of metabolism; diabetes mellitus; hypoglycemia; hyperlipidemia; obesity; food hypersensitivity; nutrition and infection; diet in the prevention of cancer or

hypertension; nutritional aspects of vegetarian diets; fast foods, organic foods, and megavitamins; and **food additives**. Extensive appendices and a subject index conclude the volume.

- **Safe Food for You and Your Family: Up-to-Date Tips from the World's Foremost Nutrition Experts**

Source: Minneapolis, MN: Chronimed Publishing. 1996. 151 p.

Contact: Available from Chronimed Publishing. P.O. Box 59032, Minneapolis, MN 55459. (800) 848-2793 or (612) 541-0239. Fax (800) 395-3344 or (612) 541-0210. PRICE: \$5.95; bulk orders available. ISBN: 1565610946.

Summary: This pocket book from the American Dietetic Association helps readers prevent foodborne illness. The book explains how to detect hidden dangers at home or away, which foods are potentially unsafe, and how foods become contaminated. Chapter One covers the basics of food safety, such as how contamination occurs, how to destroy contaminants, and seven guidelines for food safety (wash hands before handling food; refrigerate food; don't thaw food on the kitchen counter; wash hands, utensils, and surfaces after coming in contact with raw meat, poultry, and fish; never leave perishable food out over 2 hours; thoroughly cook raw meat, poultry, and fish; and freeze or refrigerate leftovers completely). Chapter Two covers some specifics of food safety, including how to spot the safest foods at the supermarket, how to store them, and how to prepare, cook, and serve safe foods at home. Chapter Three covers eating and serving safe foods away from home, whether for a picnic, camp outing, community function, or at a childcare center. The effects of **food additives**, irradiation, and other new food preparation processes are covered in Chapter Four, including information on foods created from biotechnology. The first appendix lists specific cooking, storage, and other safety recommendations for selected foods. The second appendix summarizes the characteristics of common food contaminants, including what symptoms they might produce. A subject index concludes the book.

- **Adverse Reactions to Food**

Source: Chicago, IL: American Dietetic Association. 1991. 74 p.

Contact: Available from American Dietetic Association. 216 West Jackson Boulevard, Chicago, IL 60606-6995. (800) 877-1600, ext. 5000. Fax (312) 899-4899. PRICE: \$8.45 (ADA members); \$9.95 (nonmembers). ISBN: 0880910933.

Summary: This publication reviews recent advances regarding immunologically mediated reactions to foods, including the definitions, clinical features, testing and diagnostic procedures, dietary management, and medications used to treat these reactions. Also addressed are lactose intolerance and gluten-induced enteropathy, along with reactions to **food additives** and sweeteners that are sometimes confused with true sensitivity. A separate section addresses concerns in the pediatric population, including cow's milk sensitivity and attention deficit-hyperactivity disorder. Extensive tables and appendices are included. 9 tables. 137 references.

Book Summaries: Online Booksellers

Commercial Internet-based booksellers, such as Amazon.com and Barnes&Noble.com, offer summaries which have been supplied by each title's publisher. Some summaries also

include customer reviews. Your local bookseller may have access to in-house and commercial databases that index all published books (e.g. Books in Print®). **IMPORTANT NOTE:** When following the link below, you may discover non-medical books that use the generic term “food additives” (or a synonym) in their titles.

- Amazon.com: [http://www.amazon.com/exec/obidos/external-search?tag=icongroupinterna&keyword=food additives&mode=books](http://www.amazon.com/exec/obidos/external-search?tag=icongroupinterna&keyword=food+additives&mode=books)

Chapters on Food Additives

In order to find chapters that specifically relate to food additives, an excellent source of abstracts is the Combined Health Information Database. You will need to limit your search to book chapters and food additives using the “Detailed Search” option. Go to the following hyperlink: <http://chid.nih.gov/detail/detail.html>. To find book chapters, use the drop boxes at the bottom of the search page where “You may refine your search by.” Select the dates and language you prefer, and the format option “Book Chapter.” Type “food additives” (or synonyms) into the “For these words:” box. The following is a typical result when searching for book chapters on food additives:

- **Causes of ADHD**

Source: in Wodrich, D.L. Attention-Deficit Hyperactivity Disorder: What Every Parent Should Know. 2nd ed. Baltimore, MD: Paul H. Brookes Publishing Co. 2000. p. 27-37.

Contact: Available from Paul H. Brookes Publishing Co. P.O. Box 10624, Baltimore, MD 21285. (800) 638-3775. Fax (410) 337-8539. Website: www.brookespublishing.com. PRICE: \$21.95 plus shipping and handling. ISBN: 155766398X.

Summary: This chapter is from a book that offers parents an overview of attention deficit hyperactivity disorder (ADHD), a disorder that can result in challenging parenting situations. Understanding how ADHD affects children, the ways in which one can parent and teach the children through behavioral management skills, and whether medication treatment is an appropriate option are some of the issues to be considered. In this chapter, the author focuses on the causes of ADHD. The author cautions that although a precise understanding of ADHD's causes remains elusive, a general understanding of the origins of the disorder has emerged. In addition, there is now a great deal of information about what does not cause ADHD. Topics covered include inheritance, brain differences, brain injury, genetic anomalies, the role of **food additives**, sugar, and environmental toxins, health problems, side effects of medication, and familial and social influences. ADHD is at least partially inherited and is not generally caused by brain injury or external factors such as sugar ingestion. It is generally assumed that ADHD is caused by factors in the central nervous system that are different from those existent in the central nervous systems of people without ADHD, although the exact nature of these differences has yet to be determined. Although the role of parenting in causing ADHD may be limited, help for parents is often recommended as part of a comprehensive intervention plan.

- **Infections, Intoxication, and Iatrogens**

Source: in Gerber, S.E. Etiology and Prevention of Communicative Disorders. 2nd ed. San Diego, CA: Singular Publishing Group, Inc. 1998. p. 83-127.

Contact: Available from Singular Publishing Group, Inc. 401 West 'A' Street, Suite 325, San Diego, CA 92101-7904. (800) 521-8545 or (619) 238-6777. Fax (800) 774-8398 or (619) 238-6789. E-mail: singpub@singpub.com. Website: www.singpub.com. PRICE: \$65.00 plus shipping and handling. ISBN: 1565939476.

Summary: This chapter on infection, intoxication, and iatrogens is from a textbook that focuses on the primary and secondary prevention of communicative disorders. In this chapter, the author focuses on exogenous factors for communication disorders, that is, factors that come from outside the organism. The author discusses viral diseases, including rubella, cytomegalovirus, and AIDS; protozoal diseases, including syphilis, and toxoplasmosis; bacterial diseases; maternal diseases, including diabetes, thyroid disorders, and hyperbilirubinemia; acquired diseases; intoxication, including environmental toxins, lead and other metals, radiation, petroleum and petroleum products, pesticides and other chemicals, foods and **food additives**, social toxins, fetal alcohol syndrome, drugs, and smoking; and iatrogens, including teratogens, neurotoxins, ototoxicity, antibiotics, loop diuretics, antimalarial agents, and antineoplastic or chemotherapeutic agents. The author concludes with a brief discussion of the preventive efforts appropriate in these areas. The chapter concludes with a glossary of terms and a reference list. 13 figures. 6 tables. 183 references.

- **Food Intolerance**

Source: in Gerber, J.M. Handbook of Preventive and Therapeutic Nutrition. Frederick, MD: Aspen Publishers, Inc. 1993. p. 42-45.

Contact: Available from Aspen Publishers, Inc. 7201 McKinney Circle, Frederick, MD 21701-9782. (800) 638-8437 or (301) 417-7500. PRICE: \$34. ISBN: 0834203189.

Summary: This chapter, from a handbook of preventive and therapeutic nutrition, provides an overview about food intolerance. Sections include maldigestion disorders; gastrointestinal disease, including celiac sprue, cystic fibrosis, and cholecystitis; metabolic defects, including phenylketonuria, and galactosemia; psychologic reactions; natural substances causing food intolerance, including phenylethylamine, tyramine, histamine, and histamine-releasing agents; **food additives** causing food intolerance, including tartrazine (yellow No. 5), benzoic acid, sulfites, and monosodium glutamate (MSG); and microorganism contamination causing food intolerance, including proteus and gonyaulax catenella. In each section, brief information is presented on the type of reaction common to the agent described.

- **Low-Calorie Sweeteners and Fat Replacers: The Ingredients, Use in Foods, and Diabetes Management**

Source: in Powers, M.A., ed. Handbook of Diabetes Medical Nutrition Therapy. Gaithersburg, MD: Aspen Publishers, Inc. 1996. p. 375-396.

Contact: Available from Aspen Publishers. P.O. Box 990, Frederick, MD 21705-9727. (800) 638-8437. Fax (301) 695-7931. PRICE: \$89.00. ISBN: 0834206315.

Summary: This chapter, from a handbook on diabetes medical nutrition therapy (MNT), discusses low-calorie sweeteners and fat replacements and their use in diabetes management. The authors stress that self-management training and education about the currently available choices are needed so that these foods can be appropriately incorporated into an individual's diabetes nutrition therapy plan. Topics include the challenges of formulating new foods with low-calorie sweeteners and fat replacers, the FDA's regulatory review process for **food additives**, the concept of the accepted daily

intake (ADI), currently approved low-calorie sweeteners (acesulfame potassium, aspartame, and saccharin), sweeteners pending FDA approval (alitame, cyclamate, sucralose), low-calorie sweeteners under development (L-sugars, glycosides), fat replacers, the general benefits of nutrition conscious foods, and educational points and creative strategies for incorporation of these foods into the diet. 6 figures. 2 tables. 82 references.

- **Summary of the Relationships Between Diet and Chronic Diseases**

Source: in *Diet, Nutrition, and the Prevention of Chronic Diseases*. Geneva, Switzerland: World Health Organization. 1990. p. 52-88.

Contact: Available from WHO Publications Center USA. 49 Sheridan Avenue, Albany, NY 12210. (518) 436-9686. Fax (518) 436-7433. PRICE: \$23.40. ISBN: 9241207973. Order number 1100797.

Summary: This chapter, from a report of a World Health Organization (WHO) Study Group, discusses the relationship between intake of the nutrients that should not be consumed in excess and the incidence of chronic diseases. Sections discuss the nature of research and evidence used, cardiovascular diseases, cancer, obesity, noninsulin-dependent diabetes mellitus, non-cancer conditions of the large bowel, gallstones, dental caries, sugar and fluoride, osteoporosis, chronic liver and brain disease, and the effects of alcohol, food contaminants, **food additives**, plant toxicants, marine biotoxins, and mycotoxins in relation to chronic diseases. 9 figures.

CHAPTER 6. MULTIMEDIA ON FOOD ADDITIVES

Overview

In this chapter, we show you how to keep current on multimedia sources of information on food additives. We start with sources that have been summarized by federal agencies, and then show you how to find bibliographic information catalogued by the National Library of Medicine.

Audio Recordings

The Combined Health Information Database contains abstracts on audio productions. To search CHID, go directly to the following hyperlink: <http://chid.nih.gov/detail/detail.html>. To find audio productions, use the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer, and the format option "Sound Recordings." Type "food additives" (or synonyms) into the "For these words:" box. The following is a typical result when searching for sound recordings on food additives:

- **FDA vs Rights of Individuals to Choose AIDS Therapies; the 16th National Lesbian & Gay Health Conference & 12th Annual AIDS/HIV Forum, New York, NY, June 21 - 26, 1994**

Contact: Encore Cassettes, PO Box 231340, San Diego, CA, 92194, (619) 596-8402.

Summary: This sound recording contains the transcript of a conference session that discussed the role of the Food and Drug Administration (FDA) in monitoring, licensing, and regulating unconventional therapies. The speakers explore the FDA as an adversary in the ability of the individual to choose his or her own therapies. The discussion continues with an examination of standard methodology for determining end points in clinical trials, and where these standards might be applied to testing unconventional therapies. The speakers also expound on the institutional networks and symbiotic relationships that large pharmaceutical companies are alleged to have within government agencies, such as the FDA or the National Institutes of Health (NIH). The session concludes with the speakers excoriating the FDA for its efforts to ban nutritional supplements, and to reclassify amino acids as drugs and herbs as **food additives**.

APPENDICES

APPENDIX A. PHYSICIAN RESOURCES

Overview

In this chapter, we focus on databases and Internet-based guidelines and information resources created or written for a professional audience.

NIH Guidelines

Commonly referred to as “clinical” or “professional” guidelines, the National Institutes of Health publish physician guidelines for the most common diseases. Publications are available at the following by relevant Institute¹⁰:

- Office of the Director (OD); guidelines consolidated across agencies available at <http://www.nih.gov/health/consumer/conkey.htm>
- National Institute of General Medical Sciences (NIGMS); fact sheets available at <http://www.nigms.nih.gov/news/facts/>
- National Library of Medicine (NLM); extensive encyclopedia (A.D.A.M., Inc.) with guidelines: <http://www.nlm.nih.gov/medlineplus/healthtopics.html>
- National Cancer Institute (NCI); guidelines available at <http://www.cancer.gov/cancerinfo/list.aspx?viewid=5f35036e-5497-4d86-8c2c-714a9f7c8d25>
- National Eye Institute (NEI); guidelines available at <http://www.nei.nih.gov/order/index.htm>
- National Heart, Lung, and Blood Institute (NHLBI); guidelines available at <http://www.nhlbi.nih.gov/guidelines/index.htm>
- National Human Genome Research Institute (NHGRI); research available at <http://www.genome.gov/page.cfm?pageID=10000375>
- National Institute on Aging (NIA); guidelines available at <http://www.nia.nih.gov/health/>

¹⁰ These publications are typically written by one or more of the various NIH Institutes.

- National Institute on Alcohol Abuse and Alcoholism (NIAAA); guidelines available at <http://www.niaaa.nih.gov/publications/publications.htm>
- National Institute of Allergy and Infectious Diseases (NIAID); guidelines available at <http://www.niaid.nih.gov/publications/>
- National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS); fact sheets and guidelines available at <http://www.niams.nih.gov/hi/index.htm>
- National Institute of Child Health and Human Development (NICHD); guidelines available at <http://www.nichd.nih.gov/publications/pubskey.cfm>
- National Institute on Deafness and Other Communication Disorders (NIDCD); fact sheets and guidelines at <http://www.nidcd.nih.gov/health/>
- National Institute of Dental and Craniofacial Research (NIDCR); guidelines available at <http://www.nidr.nih.gov/health/>
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK); guidelines available at <http://www.niddk.nih.gov/health/health.htm>
- National Institute on Drug Abuse (NIDA); guidelines available at <http://www.nida.nih.gov/DrugAbuse.html>
- National Institute of Environmental Health Sciences (NIEHS); environmental health information available at <http://www.niehs.nih.gov/external/facts.htm>
- National Institute of Mental Health (NIMH); guidelines available at <http://www.nimh.nih.gov/practitioners/index.cfm>
- National Institute of Neurological Disorders and Stroke (NINDS); neurological disorder information pages available at http://www.ninds.nih.gov/health_and_medical/disorder_index.htm
- National Institute of Nursing Research (NINR); publications on selected illnesses at <http://www.nih.gov/ninr/news-info/publications.html>
- National Institute of Biomedical Imaging and Bioengineering; general information at http://grants.nih.gov/grants/becon/becon_info.htm
- Center for Information Technology (CIT); referrals to other agencies based on keyword searches available at http://kb.nih.gov/www_query_main.asp
- National Center for Complementary and Alternative Medicine (NCCAM); health information available at <http://nccam.nih.gov/health/>
- National Center for Research Resources (NCRR); various information directories available at <http://www.ncrr.nih.gov/publications.asp>
- Office of Rare Diseases; various fact sheets available at http://rarediseases.info.nih.gov/html/resources/rep_pubs.html
- Centers for Disease Control and Prevention; various fact sheets on infectious diseases available at <http://www.cdc.gov/publications.htm>

NIH Databases

In addition to the various Institutes of Health that publish professional guidelines, the NIH has designed a number of databases for professionals.¹¹ Physician-oriented resources provide a wide variety of information related to the biomedical and health sciences, both past and present. The format of these resources varies. Searchable databases, bibliographic citations, full-text articles (when available), archival collections, and images are all available. The following are referenced by the National Library of Medicine:¹²

- **Bioethics:** Access to published literature on the ethical, legal, and public policy issues surrounding healthcare and biomedical research. This information is provided in conjunction with the Kennedy Institute of Ethics located at Georgetown University, Washington, D.C.: http://www.nlm.nih.gov/databases/databases_bioethics.html
- **HIV/AIDS Resources:** Describes various links and databases dedicated to HIV/AIDS research: <http://www.nlm.nih.gov/pubs/factsheets/aidsinfo.html>
- **NLM Online Exhibitions:** Describes "Exhibitions in the History of Medicine": <http://www.nlm.nih.gov/exhibition/exhibition.html>. Additional resources for historical scholarship in medicine: <http://www.nlm.nih.gov/hmd/hmd.html>
- **Biotechnology Information:** Access to public databases. The National Center for Biotechnology Information conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information for the better understanding of molecular processes affecting human health and disease: <http://www.ncbi.nlm.nih.gov/>
- **Population Information:** The National Library of Medicine provides access to worldwide coverage of population, family planning, and related health issues, including family planning technology and programs, fertility, and population law and policy: http://www.nlm.nih.gov/databases/databases_population.html
- **Cancer Information:** Access to cancer-oriented databases: http://www.nlm.nih.gov/databases/databases_cancer.html
- **Profiles in Science:** Offering the archival collections of prominent twentieth-century biomedical scientists to the public through modern digital technology: <http://www.profiles.nlm.nih.gov/>
- **Chemical Information:** Provides links to various chemical databases and references: <http://sis.nlm.nih.gov/Chem/ChemMain.html>
- **Clinical Alerts:** Reports the release of findings from the NIH-funded clinical trials where such release could significantly affect morbidity and mortality: http://www.nlm.nih.gov/databases/alerts/clinical_alerts.html
- **Space Life Sciences:** Provides links and information to space-based research (including NASA): http://www.nlm.nih.gov/databases/databases_space.html
- **MEDLINE:** Bibliographic database covering the fields of medicine, nursing, dentistry, veterinary medicine, the healthcare system, and the pre-clinical sciences: http://www.nlm.nih.gov/databases/databases_medline.html

¹¹ Remember, for the general public, the National Library of Medicine recommends the databases referenced in MEDLINEplus (<http://medlineplus.gov/> or <http://www.nlm.nih.gov/medlineplus/databases.html>).

¹² See <http://www.nlm.nih.gov/databases/databases.html>.

- **Toxicology and Environmental Health Information (TOXNET):** Databases covering toxicology and environmental health: <http://sis.nlm.nih.gov/Tox/ToxMain.html>
- **Visible Human Interface:** Anatomically detailed, three-dimensional representations of normal male and female human bodies:
http://www.nlm.nih.gov/research/visible/visible_human.html

The NLM Gateway¹³

The NLM (National Library of Medicine) Gateway is a Web-based system that lets users search simultaneously in multiple retrieval systems at the U.S. National Library of Medicine (NLM). It allows users of NLM services to initiate searches from one Web interface, providing one-stop searching for many of NLM's information resources or databases.¹⁴ To use the NLM Gateway, simply go to the search site at <http://gateway.nlm.nih.gov/gw/Cmd>. Type "food additives" (or synonyms) into the search box and click "Search." The results will be presented in a tabular form, indicating the number of references in each database category.

Results Summary

Category	Items Found
Journal Articles	32997
Books / Periodicals / Audio Visual	566
Consumer Health	602
Meeting Abstracts	0
Other Collections	217
Total	34382

HSTAT¹⁵

HSTAT is a free, Web-based resource that provides access to full-text documents used in healthcare decision-making.¹⁶ These documents include clinical practice guidelines, quick-reference guides for clinicians, consumer health brochures, evidence reports and technology assessments from the Agency for Healthcare Research and Quality (AHRQ), as well as AHRQ's Put Prevention Into Practice.¹⁷ Simply search by "food additives" (or synonyms) at the following Web site: <http://text.nlm.nih.gov>.

¹³ Adapted from NLM: <http://gateway.nlm.nih.gov/gw/Cmd?Overview.x>.

¹⁴ The NLM Gateway is currently being developed by the Lister Hill National Center for Biomedical Communications (LHNCBC) at the National Library of Medicine (NLM) of the National Institutes of Health (NIH).

¹⁵ Adapted from HSTAT: <http://www.nlm.nih.gov/pubs/factsheets/hstat.html>.

¹⁶ The HSTAT URL is <http://hstat.nlm.nih.gov/>.

¹⁷ Other important documents in HSTAT include: the National Institutes of Health (NIH) Consensus Conference Reports and Technology Assessment Reports; the HIV/AIDS Treatment Information Service (ATIS) resource documents; the Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Treatment (SAMHSA/CSAT) Treatment Improvement Protocols (TIP) and Center for Substance Abuse Prevention (SAMHSA/CSAP) Prevention Enhancement Protocols System (PEPS); the Public Health Service (PHS) Preventive Services Task Force's *Guide to Clinical Preventive Services*; the independent, nonfederal Task Force on Community Services' *Guide to Community Preventive Services*; and the Health Technology Advisory Committee (HTAC) of the Minnesota Health Care Commission (MHCC) health technology evaluations.

Coffee Break: Tutorials for Biologists¹⁸

Coffee Break is a general healthcare site that takes a scientific view of the news and covers recent breakthroughs in biology that may one day assist physicians in developing treatments. Here you will find a collection of short reports on recent biological discoveries. Each report incorporates interactive tutorials that demonstrate how bioinformatics tools are used as a part of the research process. Currently, all Coffee Breaks are written by NCBI staff.¹⁹ Each report is about 400 words and is usually based on a discovery reported in one or more articles from recently published, peer-reviewed literature.²⁰ This site has new articles every few weeks, so it can be considered an online magazine of sorts. It is intended for general background information. You can access the Coffee Break Web site at the following hyperlink: <http://www.ncbi.nlm.nih.gov/Coffeebreak/>.

Other Commercial Databases

In addition to resources maintained by official agencies, other databases exist that are commercial ventures addressing medical professionals. Here are some examples that may interest you:

- **CliniWeb International:** Index and table of contents to selected clinical information on the Internet; see <http://www.ohsu.edu/clinweb/>.
- **Medical World Search:** Searches full text from thousands of selected medical sites on the Internet; see <http://www.mwsearch.com/>.

¹⁸ Adapted from <http://www.ncbi.nlm.nih.gov/Coffeebreak/Archive/FAQ.html>.

¹⁹ The figure that accompanies each article is frequently supplied by an expert external to NCBI, in which case the source of the figure is cited. The result is an interactive tutorial that tells a biological story.

²⁰ After a brief introduction that sets the work described into a broader context, the report focuses on how a molecular understanding can provide explanations of observed biology and lead to therapies for diseases. Each vignette is accompanied by a figure and hypertext links that lead to a series of pages that interactively show how NCBI tools and resources are used in the research process.

APPENDIX B. PATIENT RESOURCES

Overview

Official agencies, as well as federally funded institutions supported by national grants, frequently publish a variety of guidelines written with the patient in mind. These are typically called “Fact Sheets” or “Guidelines.” They can take the form of a brochure, information kit, pamphlet, or flyer. Often they are only a few pages in length. Since new guidelines on food additives can appear at any moment and be published by a number of sources, the best approach to finding guidelines is to systematically scan the Internet-based services that post them.

Patient Guideline Sources

The remainder of this chapter directs you to sources which either publish or can help you find additional guidelines on topics related to food additives. Due to space limitations, these sources are listed in a concise manner. Do not hesitate to consult the following sources by either using the Internet hyperlink provided, or, in cases where the contact information is provided, contacting the publisher or author directly.

The National Institutes of Health

The NIH gateway to patients is located at <http://health.nih.gov/>. From this site, you can search across various sources and institutes, a number of which are summarized below.

Topic Pages: MEDLINEplus

The National Library of Medicine has created a vast and patient-oriented healthcare information portal called MEDLINEplus. Within this Internet-based system are “health topic pages” which list links to available materials relevant to food additives. To access this system, log on to <http://www.nlm.nih.gov/medlineplus/healthtopics.html>. From there you can either search using the alphabetical index or browse by broad topic areas. Recently, MEDLINEplus listed the following when searched for “food additives”:

- Other guides

- Child Nutrition**

- <http://www.nlm.nih.gov/medlineplus/childnutrition.html>

- Cosmetics**

- <http://www.nlm.nih.gov/medlineplus/cosmetics.html>

- Dietary Proteins**

- <http://www.nlm.nih.gov/medlineplus/dietaryproteins.html>

- Food Allergy**

- <http://www.nlm.nih.gov/medlineplus/foodallergy.html>

- Food Contamination and Poisoning**

- <http://www.nlm.nih.gov/medlineplus/foodcontaminationandpoisoning.html>

- Food Safety**

- <http://www.nlm.nih.gov/medlineplus/foodsafety.html>

- Nutrition for Seniors**

- <http://www.nlm.nih.gov/medlineplus/nutritionforseniors.html>

- Sun Exposure**

- <http://www.nlm.nih.gov/medlineplus/sunexposure.html>

You may also choose to use the search utility provided by MEDLINEplus at the following Web address: <http://www.nlm.nih.gov/medlineplus/>. Simply type a keyword into the search box and click "Search." This utility is similar to the NIH search utility, with the exception that it only includes materials that are linked within the MEDLINEplus system (mostly patient-oriented information). It also has the disadvantage of generating unstructured results. We recommend, therefore, that you use this method only if you have a very targeted search.

The Combined Health Information Database (CHID)

CHID Online is a reference tool that maintains a database directory of thousands of journal articles and patient education guidelines on food additives. CHID offers summaries that describe the guidelines available, including contact information and pricing. CHID's general Web site is <http://chid.nih.gov/>. To search this database, go to <http://chid.nih.gov/detail/detail.html>. In particular, you can use the advanced search options to look up pamphlets, reports, brochures, and information kits. The following was recently posted in this archive:

- **Food Additives**

Source: Washington, DC: International Food Information Council Foundation. 199x. [4 p.].

Contact: Available from International Food Information Council Foundation. 1100 Connecticut Avenue, NW, Suite 430, Washington, DC 20036. (202) 296-6540. Website: ificinfo.health.org. PRICE: Single copy free; bulk copies available.

Summary: Food additives play a vital role in the present bountiful and nutritious food supply. This fact sheet offers basic information about food additives, why they are used, and how regulations govern their safe use in the food supply. All food additives are

carefully regulated by Federal authorities and various international organizations to ensure that foods are safe to eat and accurately labeled. Since most people no longer live on farms, additives help keep food wholesome and appealing while en route to markets sometimes thousands of miles away from where it was grown or manufactured. Additives also improve the nutritional value of certain foods and can make them more appealing by improving their taste, texture, consistency, or color. Additives are used in foods for five main reasons: to maintain product consistency (emulsifiers, stabilizers, and thickeners), to improve or maintain nutritional value (vitamins and minerals), to maintain palatability and wholesomeness (preservatives), to provide leavening or to control acidity and alkalinity, and to enhance flavor or impart desired color (spices, coloring agents). The fact sheet reviews the history of legislation that regulates food additives and describes how they are approved for use. The fact sheet concludes with the answers to common questions about food additives, covering the difference between natural and artificial additives, sulfites, erythorbates, problems with FD and C Yellow Number 5 (which can cause hives in some people), aspartame, the relationship between food additives and childhood hyperactivity (no relationship has been established), changing decisions about the safety of food ingredients, and the role of modern technology in producing food additives. 1 table.

The NIH Search Utility

The NIH search utility allows you to search for documents on over 100 selected Web sites that comprise the NIH-WEB-SPACE. Each of these servers is “crawled” and indexed on an ongoing basis. Your search will produce a list of various documents, all of which will relate in some way to food additives. The drawbacks of this approach are that the information is not organized by theme and that the references are often a mix of information for professionals and patients. Nevertheless, a large number of the listed Web sites provide useful background information. We can only recommend this route, therefore, for relatively rare or specific disorders, or when using highly targeted searches. To use the NIH search utility, visit the following Web page: <http://search.nih.gov/index.html>.

Additional Web Sources

A number of Web sites are available to the public that often link to government sites. These can also point you in the direction of essential information. The following is a representative sample:

- AOL: <http://search.aol.com/cat.adp?id=168&layer=&from=subcats>
- Family Village: <http://www.familyvillage.wisc.edu/specific.htm>
- Google: http://directory.google.com/Top/Health/Conditions_and_Diseases/
- Med Help International: <http://www.medhelp.org/HealthTopics/A.html>
- Open Directory Project: http://dmaz.org/Health/Conditions_and_Diseases/
- Yahoo.com: http://dir.yahoo.com/Health/Diseases_and_Conditions/
- WebMD®Health: http://my.webmd.com/health_topics

News Services and Press Releases

One of the simplest ways of tracking press releases on food additives is to search the news wires. In the following sample of sources, we will briefly describe how to access each service. These services only post recent news intended for public viewing.

PR Newswire

To access the PR Newswire archive, simply go to <http://www.prnewswire.com/>. Select your country. Type “food additives” (or synonyms) into the search box. You will automatically receive information on relevant news releases posted within the last 30 days.

Reuters Health

The Reuters’ Medical News and Health eLine databases can be very useful in exploring news archives relating to food additives. While some of the listed articles are free to view, others are available for purchase for a nominal fee. To access this archive, go to <http://www.reutershealth.com/en/index.html> and search by “food additives” (or synonyms).

The NIH

Within MEDLINEplus, the NIH has made an agreement with the New York Times Syndicate, the AP News Service, and Reuters to deliver news that can be browsed by the public. Search news releases at http://www.nlm.nih.gov/medlineplus/alphaneews_a.html. MEDLINEplus allows you to browse across an alphabetical index. Or you can search by date at the following Web page: <http://www.nlm.nih.gov/medlineplus/newsbydate.html>. Often, news items are indexed by MEDLINEplus within its search engine.

Business Wire

Business Wire is similar to PR Newswire. To access this archive, simply go to <http://www.businesswire.com/>. You can scan the news by industry category or company name.

Market Wire

Market Wire is more focused on technology than the other wires. To browse the latest press releases by topic, such as alternative medicine, biotechnology, fitness, healthcare, legal, nutrition, and pharmaceuticals, access Market Wire’s Medical/Health channel at http://www.marketwire.com/mw/release_index?channel=MedicalHealth. Or simply go to Market Wire’s home page at <http://www.marketwire.com/mw/home>, type “food additives” (or synonyms) into the search box, and click on “Search News.” As this service is technology oriented, you may wish to use it when searching for press releases covering diagnostic procedures or tests.

Search Engines

Medical news is also available in the news sections of commercial Internet search engines. See the health news page at Yahoo (http://dir.yahoo.com/Health/News_and_Media/), or you can use this Web site's general news search page at <http://news.yahoo.com/>. Type in "food additives" (or synonyms). If you know the name of a company that is relevant to food additives, you can go to any stock trading Web site (such as <http://www.etrade.com/>) and search for the company name there. News items across various news sources are reported on indicated hyperlinks. Google offers a similar service at <http://news.google.com/>.

BBC

Covering news from a more European perspective, the British Broadcasting Corporation (BBC) allows the public free access to their news archive located at <http://www.bbc.co.uk/>. Search by "food additives" (or synonyms).

Newsletters on Food Additives

Find newsletters on food additives using the Combined Health Information Database (CHID). You will need to use the "Detailed Search" option. To access CHID, go to the following hyperlink: <http://chid.nih.gov/detail/detail.html>. Limit your search to "Newsletter" and "food additives." Go to the bottom of the search page where "You may refine your search by." Select the dates and language that you prefer. For the format option, select "Newsletter." Type "food additives" (or synonyms) into the "For these words:" box. The following list was generated using the options described above:

- **Food Additives-Are They Hidden Milk?**

Source: Newsletter for People with Lactose Intolerance and Milk Allergy. Spring 1990. 2 p.

Contact: Available from Newsletter for People with Lactose Intolerance and Milk Allergy. P.O. Box 3129, Ann Arbor, MI 48106-3129. (313) 572-9134.

Summary: This brief article, from a newsletter for people who have lactose intolerance and milk allergy, discusses food additives and how to determine if food additives contain milk or milk products. The bulk of the article is an alphabetical list of chemical names, with a 'yes or no' column denoting whether the chemical contains milk.

Finding Associations

There are several Internet directories that provide lists of medical associations with information on or resources relating to food additives. By consulting all of associations listed in this chapter, you will have nearly exhausted all sources for patient associations concerned with food additives.

The National Health Information Center (NHIC)

The National Health Information Center (NHIC) offers a free referral service to help people find organizations that provide information about food additives. For more information, see the NHIC's Web site at <http://www.health.gov/NHIC/> or contact an information specialist by calling 1-800-336-4797.

Directory of Health Organizations

The Directory of Health Organizations, provided by the National Library of Medicine Specialized Information Services, is a comprehensive source of information on associations. The Directory of Health Organizations database can be accessed via the Internet at <http://www.sis.nlm.nih.gov/Dir/DirMain.html>. It is composed of two parts: DIRLINE and Health Hotlines.

The DIRLINE database comprises some 10,000 records of organizations, research centers, and government institutes and associations that primarily focus on health and biomedicine. To access DIRLINE directly, go to the following Web site: <http://dirline.nlm.nih.gov/>. Simply type in "food additives" (or a synonym), and you will receive information on all relevant organizations listed in the database.

Health Hotlines directs you to toll-free numbers to over 300 organizations. You can access this database directly at <http://www.sis.nlm.nih.gov/hotlines/>. On this page, you are given the option to search by keyword or by browsing the subject list. When you have received your search results, click on the name of the organization for its description and contact information.

The Combined Health Information Database

Another comprehensive source of information on healthcare associations is the Combined Health Information Database. Using the "Detailed Search" option, you will need to limit your search to "Organizations" and "food additives". Type the following hyperlink into your Web browser: <http://chid.nih.gov/detail/detail.html>. To find associations, use the drop boxes at the bottom of the search page where "You may refine your search by." For publication date, select "All Years." Then, select your preferred language and the format option "Organization Resource Sheet." Type "food additives" (or synonyms) into the "For these words:" box. You should check back periodically with this database since it is updated every three months.

The National Organization for Rare Disorders, Inc.

The National Organization for Rare Disorders, Inc. has prepared a Web site that provides, at no charge, lists of associations organized by health topic. You can access this database at the following Web site: <http://www.rarediseases.org/search/orgsearch.html>. Type "food additives" (or a synonym) into the search box, and click "Submit Query."

APPENDIX C. FINDING MEDICAL LIBRARIES

Overview

In this Appendix, we show you how to quickly find a medical library in your area.

Preparation

Your local public library and medical libraries have interlibrary loan programs with the National Library of Medicine (NLM), one of the largest medical collections in the world. According to the NLM, most of the literature in the general and historical collections of the National Library of Medicine is available on interlibrary loan to any library. If you would like to access NLM medical literature, then visit a library in your area that can request the publications for you.²¹

Finding a Local Medical Library

The quickest method to locate medical libraries is to use the Internet-based directory published by the National Network of Libraries of Medicine (NN/LM). This network includes 4626 members and affiliates that provide many services to librarians, health professionals, and the public. To find a library in your area, simply visit <http://nnlm.gov/members/adv.html> or call 1-800-338-7657.

Medical Libraries in the U.S. and Canada

In addition to the NN/LM, the National Library of Medicine (NLM) lists a number of libraries with reference facilities that are open to the public. The following is the NLM's list and includes hyperlinks to each library's Web site. These Web pages can provide information on hours of operation and other restrictions. The list below is a small sample of

²¹ Adapted from the NLM: <http://www.nlm.nih.gov/psd/cas/interlibrary.html>.

libraries recommended by the National Library of Medicine (sorted alphabetically by name of the U.S. state or Canadian province where the library is located)²²:

- **Alabama:** Health InfoNet of Jefferson County (Jefferson County Library Cooperative, Lister Hill Library of the Health Sciences), <http://www.uab.edu/infonet/>
- **Alabama:** Richard M. Scrushy Library (American Sports Medicine Institute)
- **Arizona:** Samaritan Regional Medical Center: The Learning Center (Samaritan Health System, Phoenix, Arizona), <http://www.samaritan.edu/library/bannerlibs.htm>
- **California:** Kris Kelly Health Information Center (St. Joseph Health System, Humboldt), <http://www.humboldt1.com/~kkhic/index.html>
- **California:** Community Health Library of Los Gatos, <http://www.healthlib.org/orgresources.html>
- **California:** Consumer Health Program and Services (CHIPS) (County of Los Angeles Public Library, Los Angeles County Harbor-UCLA Medical Center Library) - Carson, CA, <http://www.colapublib.org/services/chips.html>
- **California:** Gateway Health Library (Sutter Gould Medical Foundation)
- **California:** Health Library (Stanford University Medical Center), <http://www-med.stanford.edu/healthlibrary/>
- **California:** Patient Education Resource Center - Health Information and Resources (University of California, San Francisco), <http://sfghdean.ucsf.edu/barnett/PERC/default.asp>
- **California:** Redwood Health Library (Petaluma Health Care District), <http://www.phcd.org/rdwdlib.html>
- **California:** Los Gatos PlaneTree Health Library, <http://planetreesanjose.org/>
- **California:** Sutter Resource Library (Sutter Hospitals Foundation, Sacramento), <http://suttermedicalcenter.org/library/>
- **California:** Health Sciences Libraries (University of California, Davis), <http://www.lib.ucdavis.edu/healthsci/>
- **California:** ValleyCare Health Library & Ryan Comer Cancer Resource Center (ValleyCare Health System, Pleasanton), <http://gaelnet.stmarys-ca.edu/other.libs/gbal/east/vchl.html>
- **California:** Washington Community Health Resource Library (Fremont), <http://www.healthlibrary.org/>
- **Colorado:** William V. Gervasini Memorial Library (Exempla Healthcare), <http://www.saintjosephdenver.org/yourhealth/libraries/>
- **Connecticut:** Hartford Hospital Health Science Libraries (Hartford Hospital), <http://www.harthosp.org/library/>
- **Connecticut:** Healthnet: Connecticut Consumer Health Information Center (University of Connecticut Health Center, Lyman Maynard Stowe Library), <http://library.uchc.edu/departm/hnet/>

²² Abstracted from <http://www.nlm.nih.gov/medlineplus/libraries.html>.

- **Connecticut:** Waterbury Hospital Health Center Library (Waterbury Hospital, Waterbury), <http://www.waterburyhospital.com/library/consumer.shtml>
- **Delaware:** Consumer Health Library (Christiana Care Health System, Eugene du Pont Preventive Medicine & Rehabilitation Institute, Wilmington), http://www.christianacare.org/health_guide/health_guide_pmri_health_info.cfm
- **Delaware:** Lewis B. Flinn Library (Delaware Academy of Medicine, Wilmington), <http://www.delamed.org/chls.html>
- **Georgia:** Family Resource Library (Medical College of Georgia, Augusta), http://cmc.mcg.edu/kids_families/fam_resources/fam_res_lib/frl.htm
- **Georgia:** Health Resource Center (Medical Center of Central Georgia, Macon), <http://www.mccg.org/hrc/hrchome.asp>
- **Hawaii:** Hawaii Medical Library: Consumer Health Information Service (Hawaii Medical Library, Honolulu), <http://hml.org/CHIS/>
- **Idaho:** DeArmond Consumer Health Library (Kootenai Medical Center, Coeur d'Alene), <http://www.nicon.org/DeArmond/index.htm>
- **Illinois:** Health Learning Center of Northwestern Memorial Hospital (Chicago), http://www.nmh.org/health_info/hlc.html
- **Illinois:** Medical Library (OSF Saint Francis Medical Center, Peoria), <http://www.osfsaintfrancis.org/general/library/>
- **Kentucky:** Medical Library - Services for Patients, Families, Students & the Public (Central Baptist Hospital, Lexington), <http://www.centralbap.com/education/community/library.cfm>
- **Kentucky:** University of Kentucky - Health Information Library (Chandler Medical Center, Lexington), <http://www.mc.uky.edu/PatientEd/>
- **Louisiana:** Alton Ochsner Medical Foundation Library (Alton Ochsner Medical Foundation, New Orleans), <http://www.ochsner.org/library/>
- **Louisiana:** Louisiana State University Health Sciences Center Medical Library-Shreveport, <http://lib-sh.lsuhscc.edu/>
- **Maine:** Franklin Memorial Hospital Medical Library (Franklin Memorial Hospital, Farmington), <http://www.fchn.org/fmh/lib.htm>
- **Maine:** Gerrish-True Health Sciences Library (Central Maine Medical Center, Lewiston), <http://www.cmmc.org/library/library.html>
- **Maine:** Hadley Parrot Health Science Library (Eastern Maine Healthcare, Bangor), <http://www.emh.org/hll/hpl/guide.htm>
- **Maine:** Maine Medical Center Library (Maine Medical Center, Portland), <http://www.mmc.org/library/>
- **Maine:** Parkview Hospital (Brunswick), <http://www.parkviewhospital.org/>
- **Maine:** Southern Maine Medical Center Health Sciences Library (Southern Maine Medical Center, Biddeford), <http://www.smmc.org/services/service.php3?choice=10>
- **Maine:** Stephens Memorial Hospital's Health Information Library (Western Maine Health, Norway), <http://www.wmhcc.org/Library/>

- **Manitoba, Canada:** Consumer & Patient Health Information Service (University of Manitoba Libraries), <http://www.umanitoba.ca/libraries/units/health/reference/chis.html>
- **Manitoba, Canada:** J.W. Crane Memorial Library (Deer Lodge Centre, Winnipeg), http://www.deerlodge.mb.ca/crane_library/about.asp
- **Maryland:** Health Information Center at the Wheaton Regional Library (Montgomery County, Dept. of Public Libraries, Wheaton Regional Library), <http://www.mont.lib.md.us/healthinfo/hic.asp>
- **Massachusetts:** Baystate Medical Center Library (Baystate Health System), <http://www.baystatehealth.com/1024/>
- **Massachusetts:** Boston University Medical Center Alumni Medical Library (Boston University Medical Center), <http://med-libwww.bu.edu/library/lib.html>
- **Massachusetts:** Lowell General Hospital Health Sciences Library (Lowell General Hospital, Lowell), <http://www.lowellgeneral.org/library/HomePageLinks/WWW.htm>
- **Massachusetts:** Paul E. Woodard Health Sciences Library (New England Baptist Hospital, Boston), http://www.nebh.org/health_lib.asp
- **Massachusetts:** St. Luke's Hospital Health Sciences Library (St. Luke's Hospital, Southcoast Health System, New Bedford), <http://www.southcoast.org/library/>
- **Massachusetts:** Treadwell Library Consumer Health Reference Center (Massachusetts General Hospital), <http://www.mgh.harvard.edu/library/chrcindex.html>
- **Massachusetts:** UMass HealthNet (University of Massachusetts Medical School, Worcester), <http://healthnet.umassmed.edu/>
- **Michigan:** Botsford General Hospital Library - Consumer Health (Botsford General Hospital, Library & Internet Services), <http://www.botsfordlibrary.org/consumer.htm>
- **Michigan:** Helen DeRoy Medical Library (Providence Hospital and Medical Centers), <http://www.providence-hospital.org/library/>
- **Michigan:** Marquette General Hospital - Consumer Health Library (Marquette General Hospital, Health Information Center), <http://www.mgh.org/center.html>
- **Michigan:** Patient Education Resource Center - University of Michigan Cancer Center (University of Michigan Comprehensive Cancer Center, Ann Arbor), <http://www.cancer.med.umich.edu/learn/leares.htm>
- **Michigan:** Sladen Library & Center for Health Information Resources - Consumer Health Information (Detroit), <http://www.henryford.com/body.cfm?id=39330>
- **Montana:** Center for Health Information (St. Patrick Hospital and Health Sciences Center, Missoula)
- **National:** Consumer Health Library Directory (Medical Library Association, Consumer and Patient Health Information Section), <http://caphis.mlanet.org/directory/index.html>
- **National:** National Network of Libraries of Medicine (National Library of Medicine) - provides library services for health professionals in the United States who do not have access to a medical library, <http://nnlm.gov/>
- **National:** NN/LM List of Libraries Serving the Public (National Network of Libraries of Medicine), <http://nnlm.gov/members/>

- **Nevada:** Health Science Library, West Charleston Library (Las Vegas-Clark County Library District, Las Vegas), http://www.lvcld.org/special_collections/medical/index.htm
- **New Hampshire:** Dartmouth Biomedical Libraries (Dartmouth College Library, Hanover), <http://www.dartmouth.edu/~biomed/resources.html#conshealth.html#d/>
- **New Jersey:** Consumer Health Library (Rahway Hospital, Rahway), <http://www.rahwayhospital.com/library.htm>
- **New Jersey:** Dr. Walter Phillips Health Sciences Library (Englewood Hospital and Medical Center, Englewood), <http://www.englewoodhospital.com/links/index.htm>
- **New Jersey:** Meland Foundation (Englewood Hospital and Medical Center, Englewood), <http://www.geocities.com/ResearchTriangle/9360/>
- **New York:** Choices in Health Information (New York Public Library) - NLM Consumer Pilot Project participant, <http://www.nypl.org/branch/health/links.html>
- **New York:** Health Information Center (Upstate Medical University, State University of New York, Syracuse), <http://www.upstate.edu/library/hic/>
- **New York:** Health Sciences Library (Long Island Jewish Medical Center, New Hyde Park), <http://www.lij.edu/library/library.html>
- **New York:** ViaHealth Medical Library (Rochester General Hospital), <http://www.nyam.org/library/>
- **Ohio:** Consumer Health Library (Akron General Medical Center, Medical & Consumer Health Library), <http://www.akrongeneral.org/hwlibrary.htm>
- **Oklahoma:** The Health Information Center at Saint Francis Hospital (Saint Francis Health System, Tulsa), <http://www.sfh-tulsa.com/services/healthinfo.asp>
- **Oregon:** Planetree Health Resource Center (Mid-Columbia Medical Center, The Dalles), <http://www.mcmc.net/phrc/>
- **Pennsylvania:** Community Health Information Library (Milton S. Hershey Medical Center, Hershey), <http://www.hmc.psu.edu/commhealth/>
- **Pennsylvania:** Community Health Resource Library (Geisinger Medical Center, Danville), <http://www.geisinger.edu/education/commmlib.shtml>
- **Pennsylvania:** HealthInfo Library (Moses Taylor Hospital, Scranton), <http://www.mth.org/healthwellness.html>
- **Pennsylvania:** Hopwood Library (University of Pittsburgh, Health Sciences Library System, Pittsburgh), http://www.hsls.pitt.edu/guides/chi/hopwood/index_html
- **Pennsylvania:** Koop Community Health Information Center (College of Physicians of Philadelphia), <http://www.collphyphil.org/kooppg1.shtml>
- **Pennsylvania:** Learning Resources Center - Medical Library (Susquehanna Health System, Williamsport), <http://www.shscare.org/services/lrc/index.asp>
- **Pennsylvania:** Medical Library (UPMC Health System, Pittsburgh), <http://www.upmc.edu/passavant/library.htm>
- **Quebec, Canada:** Medical Library (Montreal General Hospital), <http://www.mghlib.mcgill.ca/>

- **South Dakota:** Rapid City Regional Hospital Medical Library (Rapid City Regional Hospital), <http://www.rcrh.org/Services/Library/Default.asp>
- **Texas:** Houston HealthWays (Houston Academy of Medicine-Texas Medical Center Library), <http://hhw.library.tmc.edu/>
- **Washington:** Community Health Library (Kittitas Valley Community Hospital), <http://www.kvch.com/>
- **Washington:** Southwest Washington Medical Center Library (Southwest Washington Medical Center, Vancouver), <http://www.swmedicalcenter.com/body.cfm?id=72>

ONLINE GLOSSARIES

The Internet provides access to a number of free-to-use medical dictionaries. The National Library of Medicine has compiled the following list of online dictionaries:

- ADAM Medical Encyclopedia (A.D.A.M., Inc.), comprehensive medical reference:
<http://www.nlm.nih.gov/medlineplus/encyclopedia.html>
- MedicineNet.com Medical Dictionary (MedicineNet, Inc.):
<http://www.medterms.com/Script/Main/hp.asp>
- Merriam-Webster Medical Dictionary (Inteli-Health, Inc.):
<http://www.intelihealth.com/IH/>
- Multilingual Glossary of Technical and Popular Medical Terms in Eight European Languages (European Commission) - Danish, Dutch, English, French, German, Italian, Portuguese, and Spanish: <http://allserv.rug.ac.be/~rvdstich/eugloss/welcome.html>
- On-line Medical Dictionary (CancerWEB): <http://cancerweb.ncl.ac.uk/omd/>
- Rare Diseases Terms (Office of Rare Diseases):
<http://ord.aspensys.com/asp/diseases/diseases.asp>
- Technology Glossary (National Library of Medicine) - Health Care Technology:
<http://www.nlm.nih.gov/nichsr/ta101/ta10108.htm>

Beyond these, MEDLINEplus contains a very patient-friendly encyclopedia covering every aspect of medicine (licensed from A.D.A.M., Inc.). The ADAM Medical Encyclopedia can be accessed at <http://www.nlm.nih.gov/medlineplus/encyclopedia.html>. ADAM is also available on commercial Web sites such as drkoop.com (<http://www.drkoop.com/>) and Web MD (http://my.webmd.com/adam/asset/adam_disease_articles/a_to_z/a). The NIH suggests the following Web sites in the ADAM Medical Encyclopedia when searching for information on food additives:

- **Basic Guidelines for Food Additives**

Food additives

Web site: <http://www.nlm.nih.gov/medlineplus/ency/article/002435.htm>

- **Nutrition for Food Additives**

Fats

Web site: <http://www.nlm.nih.gov/medlineplus/ency/article/002468.htm>

Vitamins

Web site: <http://www.nlm.nih.gov/medlineplus/ency/article/002399.htm>

Online Dictionary Directories

The following are additional online directories compiled by the National Library of Medicine, including a number of specialized medical dictionaries:

- Medical Dictionaries: Medical & Biological (World Health Organization):
<http://www.who.int/hlt/virtuallibrary/English/diction.htm#Medical>
- MEL-Michigan Electronic Library List of Online Health and Medical Dictionaries (Michigan Electronic Library): **<http://mel.lib.mi.us/health/health-dictionaries.html>**
- Patient Education: Glossaries (DMOZ Open Directory Project):
http://dmoz.org/Health/Education/Patient_Education/Glossaries/
- Web of Online Dictionaries (Bucknell University):
<http://www.yourdictionary.com/diction5.html#medicine>

FOOD ADDITIVES DICTIONARY

The definitions below are derived from official public sources, including the National Institutes of Health [NIH] and the European Union [EU].

Abdomen: That portion of the body that lies between the thorax and the pelvis. [NIH]

Abdominal: Having to do with the abdomen, which is the part of the body between the chest and the hips that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs. [NIH]

Acidity: The quality of being acid or sour; containing acid (hydrogen ions). [EU]

Adaptability: Ability to develop some form of tolerance to conditions extremely different from those under which a living organism evolved. [NIH]

Adenosine: A nucleoside that is composed of adenine and d-ribose. Adenosine or adenosine derivatives play many important biological roles in addition to being components of DNA and RNA. Adenosine itself is a neurotransmitter. [NIH]

Adolescence: The period of life beginning with the appearance of secondary sex characteristics and terminating with the cessation of somatic growth. The years usually referred to as adolescence lie between 13 and 18 years of age. [NIH]

Adolescent Nutrition: Nutrition of children aged 13-18 years. [NIH]

Adrenal Cortex: The outer layer of the adrenal gland. It secretes mineralocorticoids, androgens, and glucocorticoids. [NIH]

Adrenal Medulla: The inner part of the adrenal gland; it synthesizes, stores and releases catecholamines. [NIH]

Adrenergic: Activated by, characteristic of, or secreting epinephrine or substances with similar activity; the term is applied to those nerve fibres that liberate norepinephrine at a synapse when a nerve impulse passes, i.e., the sympathetic fibres. [EU]

Adverse Effect: An unwanted side effect of treatment. [NIH]

Affinity: 1. Inherent likeness or relationship. 2. A special attraction for a specific element, organ, or structure. 3. Chemical affinity; the force that binds atoms in molecules; the tendency of substances to combine by chemical reaction. 4. The strength of noncovalent chemical binding between two substances as measured by the dissociation constant of the complex. 5. In immunology, a thermodynamic expression of the strength of interaction between a single antigen-binding site and a single antigenic determinant (and thus of the stereochemical compatibility between them), most accurately applied to interactions among simple, uniform antigenic determinants such as haptens. Expressed as the association constant (K litres mole⁻¹), which, owing to the heterogeneity of affinities in a population of antibody molecules of a given specificity, actually represents an average value (mean intrinsic association constant). 6. The reciprocal of the dissociation constant. [EU]

Agonist: In anatomy, a prime mover. In pharmacology, a drug that has affinity for and stimulates physiologic activity at cell receptors normally stimulated by naturally occurring substances. [EU]

Alertness: A state of readiness to detect and respond to certain specified small changes occurring at random intervals in the environment. [NIH]

Algorithms: A procedure consisting of a sequence of algebraic formulas and/or logical steps to calculate or determine a given task. [NIH]

Alimentary: Pertaining to food or nutritive material, or to the organs of digestion. [EU]

Alkaline: Having the reactions of an alkali. [EU]

Alkaloid: A member of a large group of chemicals that are made by plants and have nitrogen in them. Some alkaloids have been shown to work against cancer. [NIH]

Allergens: Antigen-type substances that produce immediate hypersensitivity (hypersensitivity, immediate). [NIH]

Alpha Particles: Positively charged particles composed of two protons and two neutrons, i.e., helium nuclei, emitted during disintegration of very heavy isotopes; a beam of alpha particles or an alpha ray has very strong ionizing power, but weak penetrability. [NIH]

Alternative medicine: Practices not generally recognized by the medical community as standard or conventional medical approaches and used instead of standard treatments. Alternative medicine includes the taking of dietary supplements, megadose vitamins, and herbal preparations; the drinking of special teas; and practices such as massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

Amine: An organic compound containing nitrogen; any member of a group of chemical compounds formed from ammonia by replacement of one or more of the hydrogen atoms by organic (hydrocarbon) radicals. The amines are distinguished as primary, secondary, and tertiary, according to whether one, two, or three hydrogen atoms are replaced. The amines include allylamine, amylamine, ethylamine, methylamine, phenylamine, propylamine, and many other compounds. [EU]

Amino acid: Any organic compound containing an amino (-NH₂) and a carboxyl (-COOH) group. The 20 α-amino acids listed in the accompanying table are the amino acids from which proteins are synthesized by formation of peptide bonds during ribosomal translation of messenger RNA; all except glycine, which is not optically active, have the L configuration. Other amino acids occurring in proteins, such as hydroxyproline in collagen, are formed by posttranslational enzymatic modification of amino acid residues in polypeptide chains. There are also several important amino acids, such as the neurotransmitter γ-aminobutyric acid, that have no relation to proteins. Abbreviated AA. [EU]

Anabolic: Relating to, characterized by, or promoting anabolism. [EU]

Anaerobic: 1. Lacking molecular oxygen. 2. Growing, living, or occurring in the absence of molecular oxygen; pertaining to an anaerobe. [EU]

Analgesic: An agent that alleviates pain without causing loss of consciousness. [EU]

Anatomical: Pertaining to anatomy, or to the structure of the organism. [EU]

Androgenic: Producing masculine characteristics. [EU]

Androgens: A class of sex hormones associated with the development and maintenance of the secondary male sex characteristics, sperm induction, and sexual differentiation. In addition to increasing virility and libido, they also increase nitrogen and water retention and stimulate skeletal growth. [NIH]

Angioedema: A vascular reaction involving the deep dermis or subcutaneous or submucosal tissues, representing localized edema caused by dilatation and increased permeability of the capillaries, and characterized by development of giant wheals. [EU]

Animal model: An animal with a disease either the same as or like a disease in humans. Animal models are used to study the development and progression of diseases and to test new treatments before they are given to humans. Animals with transplanted human cancers or other tissues are called xenograft models. [NIH]

Anomalies: Birth defects; abnormalities. [NIH]

Antagonism: Interference with, or inhibition of, the growth of a living organism by another living organism, due either to creation of unfavorable conditions (e. g. exhaustion of food supplies) or to production of a specific antibiotic substance (e. g. penicillin). [NIH]

Antibiotics: Substances produced by microorganisms that can inhibit or suppress the growth of other microorganisms. [NIH]

Antibody: A type of protein made by certain white blood cells in response to a foreign substance (antigen). Each antibody can bind to only a specific antigen. The purpose of this binding is to help destroy the antigen. Antibodies can work in several ways, depending on the nature of the antigen. Some antibodies destroy antigens directly. Others make it easier for white blood cells to destroy the antigen. [NIH]

Anticoagulant: A drug that helps prevent blood clots from forming. Also called a blood thinner. [NIH]

Antidote: A remedy for counteracting a poison. [EU]

Antifungal: Destructive to fungi, or suppressing their reproduction or growth; effective against fungal infections. [EU]

Antifungal Agents: Substances that destroy fungi by suppressing their ability to grow or reproduce. They differ from fungicides, industrial because they defend against fungi present in human or animal tissues. [NIH]

Antigen: Any substance which is capable, under appropriate conditions, of inducing a specific immune response and of reacting with the products of that response, that is, with specific antibody or specifically sensitized T-lymphocytes, or both. Antigens may be soluble substances, such as toxins and foreign proteins, or particulate, such as bacteria and tissue cells; however, only the portion of the protein or polysaccharide molecule known as the antigenic determinant (q.v.) combines with antibody or a specific receptor on a lymphocyte. Abbreviated Ag. [EU]

Anti-infective: An agent that so acts. [EU]

Anti-Infective Agents: Substances that prevent infectious agents or organisms from spreading or kill infectious agents in order to prevent the spread of infection. [NIH]

Anti-inflammatory: Having to do with reducing inflammation. [NIH]

Anti-Inflammatory Agents: Substances that reduce or suppress inflammation. [NIH]

Antimicrobial: Killing microorganisms, or suppressing their multiplication or growth. [EU]

Antineoplastic: Inhibiting or preventing the development of neoplasms, checking the maturation and proliferation of malignant cells. [EU]

Antioxidant: A substance that prevents damage caused by free radicals. Free radicals are highly reactive chemicals that often contain oxygen. They are produced when molecules are split to give products that have unpaired electrons. This process is called oxidation. [NIH]

Antipyretic: An agent that relieves or reduces fever. Called also antifebrile, antithermic and febrifuge. [EU]

Anus: The opening of the rectum to the outside of the body. [NIH]

Apoptosis: One of the two mechanisms by which cell death occurs (the other being the pathological process of necrosis). Apoptosis is the mechanism responsible for the physiological deletion of cells and appears to be intrinsically programmed. It is characterized by distinctive morphologic changes in the nucleus and cytoplasm, chromatin cleavage at regularly spaced sites, and the endonucleolytic cleavage of genomic DNA (DNA fragmentation) at internucleosomal sites. This mode of cell death serves as a balance to mitosis in regulating the size of animal tissues and in mediating pathologic processes

associated with tumor growth. [NIH]

Applicability: A list of the commodities to which the candidate method can be applied as presented or with minor modifications. [NIH]

Aqueous: Having to do with water. [NIH]

Arachidonic Acid: An unsaturated, essential fatty acid. It is found in animal and human fat as well as in the liver, brain, and glandular organs, and is a constituent of animal phosphatides. It is formed by the synthesis from dietary linoleic acid and is a precursor in the biosynthesis of prostaglandins, thromboxanes, and leukotrienes. [NIH]

Aromatic: Having a spicy odour. [EU]

Arterial: Pertaining to an artery or to the arteries. [EU]

Arteries: The vessels carrying blood away from the heart. [NIH]

Articular: Of or pertaining to a joint. [EU]

Ascorbic Acid: A six carbon compound related to glucose. It is found naturally in citrus fruits and many vegetables. Ascorbic acid is an essential nutrient in human diets, and necessary to maintain connective tissue and bone. Its biologically active form, vitamin C, functions as a reducing agent and coenzyme in several metabolic pathways. Vitamin C is considered an antioxidant. [NIH]

Aspartame: Flavoring agent sweeter than sugar, metabolized as phenylalanine and aspartic acid. [NIH]

Aspartic: The naturally occurring substance is L-aspartic acid. One of the acidic-amino-acids is obtained by the hydrolysis of proteins. [NIH]

Aspartic Acid: One of the non-essential amino acids commonly occurring in the L-form. It is found in animals and plants, especially in sugar cane and sugar beets. It may be a neurotransmitter. [NIH]

Aspirin: A drug that reduces pain, fever, inflammation, and blood clotting. Aspirin belongs to the family of drugs called nonsteroidal anti-inflammatory agents. It is also being studied in cancer prevention. [NIH]

Assay: Determination of the amount of a particular constituent of a mixture, or of the biological or pharmacological potency of a drug. [EU]

Atopic: Pertaining to an atopen or to atopy; allergic. [EU]

Atopic Eczema: Generic term for acute or chronic inflammatory conditions of the skin, typically erythematous, edematous, papular, vesicular, and crusting; often accompanied by sensations of itching and burning. [NIH]

Bacteria: Unicellular prokaryotic microorganisms which generally possess rigid cell walls, multiply by cell division, and exhibit three principal forms: round or coccid, rodlike or bacillary, and spiral or spirochetal. [NIH]

Bactericidal: Substance lethal to bacteria; substance capable of killing bacteria. [NIH]

Bacterium: Microscopic organism which may have a spherical, rod-like, or spiral unicellular or non-cellular body. Bacteria usually reproduce through asexual processes. [NIH]

Basal cells: Small, round cells found in the lower part (or base) of the epidermis, the outer layer of the skin. [NIH]

Base: In chemistry, the nonacid part of a salt; a substance that combines with acids to form salts; a substance that dissociates to give hydroxide ions in aqueous solutions; a substance whose molecule or ion can combine with a proton (hydrogen ion); a substance capable of donating a pair of electrons (to an acid) for the formation of a coordinate covalent bond. [EU]

Base Composition: The relative amounts of the purines and pyrimidines in a nucleic acid. [NIH]

Basophil: A type of white blood cell. Basophils are granulocytes. [NIH]

Benign: Not cancerous; does not invade nearby tissue or spread to other parts of the body. [NIH]

Benzoic Acid: A fungistatic compound that is widely used as a food preservative. It is conjugated to glycine in the liver and excreted as hippuric acid. [NIH]

Bifidobacterium: A rod-shaped, gram-positive, non-acid-fast, non-spore-forming, non-motile bacterium that is a genus of the family Actinomycetaceae. It inhabits the intestines and feces of humans as well as the human vagina. [NIH]

Bile: An emulsifying agent produced in the liver and secreted into the duodenum. Its composition includes bile acids and salts, cholesterol, and electrolytes. It aids digestion of fats in the duodenum. [NIH]

Bile duct: A tube through which bile passes in and out of the liver. [NIH]

Bilirubin: A bile pigment that is a degradation product of heme. [NIH]

Bioavailability: The degree to which a drug or other substance becomes available to the target tissue after administration. [EU]

Biochemical: Relating to biochemistry; characterized by, produced by, or involving chemical reactions in living organisms. [EU]

Biocompatible Materials: Synthetic or natural materials, other than drugs, that are used to replace or repair any body tissue or bodily function. [NIH]

Biotechnology: Body of knowledge related to the use of organisms, cells or cell-derived constituents for the purpose of developing products which are technically, scientifically and clinically useful. Alteration of biologic function at the molecular level (i.e., genetic engineering) is a central focus; laboratory methods used include transfection and cloning technologies, sequence and structure analysis algorithms, computer databases, and gene and protein structure function analysis and prediction. [NIH]

Biotransformation: The chemical alteration of an exogenous substance by or in a biological system. The alteration may inactivate the compound or it may result in the production of an active metabolite of an inactive parent compound. The alteration may be either non-synthetic (oxidation-reduction, hydrolysis) or synthetic (glucuronide formation, sulfate conjugation, acetylation, methylation). This also includes metabolic detoxication and clearance. [NIH]

Blood Coagulation: The process of the interaction of blood coagulation factors that results in an insoluble fibrin clot. [NIH]

Blood pressure: The pressure of blood against the walls of a blood vessel or heart chamber. Unless there is reference to another location, such as the pulmonary artery or one of the heart chambers, it refers to the pressure in the systemic arteries, as measured, for example, in the forearm. [NIH]

Blood vessel: A tube in the body through which blood circulates. Blood vessels include a network of arteries, arterioles, capillaries, venules, and veins. [NIH]

Body Burden: The total amount of a chemical, metal or radioactive substance present at any time after absorption in the body of man or animal. [NIH]

Body Fluids: Liquid components of living organisms. [NIH]

Bowel: The long tube-shaped organ in the abdomen that completes the process of digestion. There is both a small and a large bowel. Also called the intestine. [NIH]

Brachytherapy: A collective term for interstitial, intracavity, and surface radiotherapy. It uses small sealed or partly-sealed sources that may be placed on or near the body surface or within a natural body cavity or implanted directly into the tissues. [NIH]

Branch: Most commonly used for branches of nerves, but applied also to other structures. [NIH]

Breakdown: A physical, metal, or nervous collapse. [NIH]

Bronchial: Pertaining to one or more bronchi. [EU]

Caffeine: A methylxanthine naturally occurring in some beverages and also used as a pharmacological agent. Caffeine's most notable pharmacological effect is as a central nervous system stimulant, increasing alertness and producing agitation. It also relaxes smooth muscle, stimulates cardiac muscle, stimulates diuresis, and appears to be useful in the treatment of some types of headache. Several cellular actions of caffeine have been observed, but it is not entirely clear how each contributes to its pharmacological profile. Among the most important are inhibition of cyclic nucleotide phosphodiesterases, antagonism of adenosine receptors, and modulation of intracellular calcium handling. [NIH]

Calcium: A basic element found in nearly all organized tissues. It is a member of the alkaline earth family of metals with the atomic symbol Ca, atomic number 20, and atomic weight 40. Calcium is the most abundant mineral in the body and combines with phosphorus to form calcium phosphate in the bones and teeth. It is essential for the normal functioning of nerves and muscles and plays a role in blood coagulation (as factor IV) and in many enzymatic processes. [NIH]

Capsaicin: Cytotoxic alkaloid from various species of *Capsicum* (pepper, paprika), of the Solanaceae. [NIH]

Capsules: Hard or soft soluble containers used for the oral administration of medicine. [NIH]

Carbohydrate: An aldehyde or ketone derivative of a polyhydric alcohol, particularly of the pentahydric and hexahydric alcohols. They are so named because the hydrogen and oxygen are usually in the proportion to form water, $(CH_2O)_n$. The most important carbohydrates are the starches, sugars, celluloses, and gums. They are classified into mono-, di-, tri-, poly- and heterosaccharides. [EU]

Carbon Dioxide: A colorless, odorless gas that can be formed by the body and is necessary for the respiration cycle of plants and animals. [NIH]

Carcinogenesis: The process by which normal cells are transformed into cancer cells. [NIH]

Carcinogenic: Producing carcinoma. [EU]

Carcinogenicity: The ability to cause cancer. [NIH]

Carcinogens: Substances that increase the risk of neoplasms in humans or animals. Both genotoxic chemicals, which affect DNA directly, and nongenotoxic chemicals, which induce neoplasms by other mechanism, are included. [NIH]

Carcinoma: Cancer that begins in the skin or in tissues that line or cover internal organs. [NIH]

Cardiac: Having to do with the heart. [NIH]

Cardiovascular: Having to do with the heart and blood vessels. [NIH]

Cardiovascular disease: Any abnormal condition characterized by dysfunction of the heart and blood vessels. CVD includes atherosclerosis (especially coronary heart disease, which can lead to heart attacks), cerebrovascular disease (e.g., stroke), and hypertension (high blood pressure). [NIH]

Case report: A detailed report of the diagnosis, treatment, and follow-up of an individual

patient. Case reports also contain some demographic information about the patient (for example, age, gender, ethnic origin). [NIH]

Case-Control Studies: Studies which start with the identification of persons with a disease of interest and a control (comparison, referent) group without the disease. The relationship of an attribute to the disease is examined by comparing diseased and non-diseased persons with regard to the frequency or levels of the attribute in each group. [NIH]

Catecholamine: A group of chemical substances manufactured by the adrenal medulla and secreted during physiological stress. [NIH]

Cecum: The beginning of the large intestine. The cecum is connected to the lower part of the small intestine, called the ileum. [NIH]

Cell: The individual unit that makes up all of the tissues of the body. All living things are made up of one or more cells. [NIH]

Cell Death: The termination of the cell's ability to carry out vital functions such as metabolism, growth, reproduction, responsiveness, and adaptability. [NIH]

Cell Division: The fission of a cell. [NIH]

Cell proliferation: An increase in the number of cells as a result of cell growth and cell division. [NIH]

Cellulose: A polysaccharide with glucose units linked as in cellobiose. It is the chief constituent of plant fibers, cotton being the purest natural form of the substance. As a raw material, it forms the basis for many derivatives used in chromatography, ion exchange materials, explosives manufacturing, and pharmaceutical preparations. [NIH]

Central Nervous System: The main information-processing organs of the nervous system, consisting of the brain, spinal cord, and meninges. [NIH]

Cerebrovascular: Pertaining to the blood vessels of the cerebrum, or brain. [EU]

Cervical: Relating to the neck, or to the neck of any organ or structure. Cervical lymph nodes are located in the neck; cervical cancer refers to cancer of the uterine cervix, which is the lower, narrow end (the "neck") of the uterus. [NIH]

Character: In current usage, approximately equivalent to personality. The sum of the relatively fixed personality traits and habitual modes of response of an individual. [NIH]

Chelating Agents: Organic chemicals that form two or more coordination bonds with a central metal ion. Heterocyclic rings are formed with the central metal atom as part of the ring. Some biological systems form metal chelates, e.g., the iron-binding porphyrin group of hemoglobin and the magnesium-binding chlorophyll of plants. (From Hawley's Condensed Chemical Dictionary, 12th ed) They are used chemically to remove ions from solutions, medicinally against microorganisms, to treat metal poisoning, and in chemotherapy protocols. [NIH]

Chemotherapeutic agent: A drug used to treat cancer. [NIH]

Chemotherapy: Treatment with anticancer drugs. [NIH]

Chlorophyll: Porphyrin derivatives containing magnesium that act to convert light energy in photosynthetic organisms. [NIH]

Cholecystitis: Inflammation of the gallbladder. [NIH]

Cholesterol: The principal sterol of all higher animals, distributed in body tissues, especially the brain and spinal cord, and in animal fats and oils. [NIH]

Chorda Tympani Nerve: A branch of the facial (7th cranial) nerve which passes through the middle ear and continues through the petrotympanic fissure. The chorda tympani nerve carries taste sensation from the anterior two-thirds of the tongue and conveys

parasympathetic efferents to the salivary glands. [NIH]

Chromatin: The material of chromosomes. It is a complex of DNA, histones, and nonhistone proteins (chromosomal proteins, non-histone) found within the nucleus of a cell. [NIH]

Chromosomal: Pertaining to chromosomes. [EU]

Chromosome: Part of a cell that contains genetic information. Except for sperm and eggs, all human cells contain 46 chromosomes. [NIH]

Chronic: A disease or condition that persists or progresses over a long period of time. [NIH]

Chronic Disease: Disease or ailment of long duration. [NIH]

Citric Acid: A key intermediate in metabolism. It is an acid compound found in citrus fruits. The salts of citric acid (citrate) can be used as anticoagulants due to their calcium chelating ability. [NIH]

Citrus: Any tree or shrub of the Rue family or the fruit of these plants. [NIH]

Claviceps: A genus of ascomycetous fungi, family Clavicipitaceae, order Hypocreales, parasitic on various grasses. The sclerotia contain several toxic alkaloids. *Claviceps purpurea* on rye causes ergotism. [NIH]

Clear cell carcinoma: A rare type of tumor of the female genital tract in which the inside of the cells looks clear when viewed under a microscope. [NIH]

Clinical Medicine: The study and practice of medicine by direct examination of the patient. [NIH]

Clinical trial: A research study that tests how well new medical treatments or other interventions work in people. Each study is designed to test new methods of screening, prevention, diagnosis, or treatment of a disease. [NIH]

Cloning: The production of a number of genetically identical individuals; in genetic engineering, a process for the efficient replication of a great number of identical DNA molecules. [NIH]

Coenzyme: An organic nonprotein molecule, frequently a phosphorylated derivative of a water-soluble vitamin, that binds with the protein molecule (apoenzyme) to form the active enzyme (holoenzyme). [EU]

Collagen: A polypeptide substance comprising about one third of the total protein in mammalian organisms. It is the main constituent of skin, connective tissue, and the organic substance of bones and teeth. Different forms of collagen are produced in the body but all consist of three alpha-polypeptide chains arranged in a triple helix. Collagen is differentiated from other fibrous proteins, such as elastin, by the content of proline, hydroxyproline, and hydroxylysine; by the absence of tryptophan; and particularly by the high content of polar groups which are responsible for its swelling properties. [NIH]

Collagen disease: A term previously used to describe chronic diseases of the connective tissue (e.g., rheumatoid arthritis, systemic lupus erythematosus, and systemic sclerosis), but now is thought to be more appropriate for diseases associated with defects in collagen, which is a component of the connective tissue. [NIH]

Collapse: 1. A state of extreme prostration and depression, with failure of circulation. 2. Abnormal falling in of the walls of any part of organ. [EU]

Colon: The long, coiled, tubelike organ that removes water from digested food. The remaining material, solid waste called stool, moves through the colon to the rectum and leaves the body through the anus. [NIH]

Comet Assay: A genotoxicological technique for measuring DNA damage in an individual cell using single-cell gel electrophoresis. Cell DNA fragments assume a "comet with tail"

formation on electrophoresis and are detected with an image analysis system. Alkaline assay conditions facilitate sensitive detection of single-strand damage. [NIH]

Communication Disorders: Disorders of verbal and nonverbal communication caused by receptive or expressive language disorders, cognitive dysfunction (e.g., mental retardation), psychiatric conditions, and hearing disorders. [NIH]

Complement: A term originally used to refer to the heat-labile factor in serum that causes immune cytolysis, the lysis of antibody-coated cells, and now referring to the entire functionally related system comprising at least 20 distinct serum proteins that is the effector not only of immune cytolysis but also of other biologic functions. Complement activation occurs by two different sequences, the classic and alternative pathways. The proteins of the classic pathway are termed 'components of complement' and are designated by the symbols C1 through C9. C1 is a calcium-dependent complex of three distinct proteins C1q, C1r and C1s. The proteins of the alternative pathway (collectively referred to as the properdin system) and complement regulatory proteins are known by semisystematic or trivial names. Fragments resulting from proteolytic cleavage of complement proteins are designated with lower-case letter suffixes, e.g., C3a. Inactivated fragments may be designated with the suffix 'i', e.g. C3bi. Activated components or complexes with biological activity are designated by a bar over the symbol e.g. C1 or C4b,2a. The classic pathway is activated by the binding of C1 to classic pathway activators, primarily antigen-antibody complexes containing IgM, IgG1, IgG3; C1q binds to a single IgM molecule or two adjacent IgG molecules. The alternative pathway can be activated by IgA immune complexes and also by nonimmunologic materials including bacterial endotoxins, microbial polysaccharides, and cell walls. Activation of the classic pathway triggers an enzymatic cascade involving C1, C4, C2 and C3; activation of the alternative pathway triggers a cascade involving C3 and factors B, D and P. Both result in the cleavage of C5 and the formation of the membrane attack complex. Complement activation also results in the formation of many biologically active complement fragments that act as anaphylatoxins, opsonins, or chemotactic factors. [EU]

Complementary and alternative medicine: CAM. Forms of treatment that are used in addition to (complementary) or instead of (alternative) standard treatments. These practices are not considered standard medical approaches. CAM includes dietary supplements, megadose vitamins, herbal preparations, special teas, massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

Complementary medicine: Practices not generally recognized by the medical community as standard or conventional medical approaches and used to enhance or complement the standard treatments. Complementary medicine includes the taking of dietary supplements, megadose vitamins, and herbal preparations; the drinking of special teas; and practices such as massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

Computational Biology: A field of biology concerned with the development of techniques for the collection and manipulation of biological data, and the use of such data to make biological discoveries or predictions. This field encompasses all computational methods and theories applicable to molecular biology and areas of computer-based techniques for solving biological problems including manipulation of models and datasets. [NIH]

Condiments: Aromatic substances added to food before or after cooking to enhance its flavor. These are usually of vegetable origin. [NIH]

Conjugated: Acting or operating as if joined; simultaneous. [EU]

Connective Tissue: Tissue that supports and binds other tissues. It consists of connective tissue cells embedded in a large amount of extracellular matrix. [NIH]

Connective Tissue: Tissue that supports and binds other tissues. It consists of connective tissue cells embedded in a large amount of extracellular matrix. [NIH]

Connective Tissue Cells: A group of cells that includes fibroblasts, cartilage cells, adipocytes, smooth muscle cells, and bone cells. [NIH]

Consumption: Pulmonary tuberculosis. [NIH]

Contamination: The soiling or pollution by inferior material, as by the introduction of organisms into a wound, or sewage into a stream. [EU]

Contraindications: Any factor or sign that it is unwise to pursue a certain kind of action or treatment, e. g. giving a general anesthetic to a person with pneumonia. [NIH]

Coordination: Muscular or motor regulation or the harmonious cooperation of muscles or groups of muscles, in a complex action or series of actions. [NIH]

Coronary: Encircling in the manner of a crown; a term applied to vessels; nerves, ligaments, etc. The term usually denotes the arteries that supply the heart muscle and, by extension, a pathologic involvement of them. [EU]

Coronary heart disease: A type of heart disease caused by narrowing of the coronary arteries that feed the heart, which needs a constant supply of oxygen and nutrients carried by the blood in the coronary arteries. When the coronary arteries become narrowed or clogged by fat and cholesterol deposits and cannot supply enough blood to the heart, CHD results. [NIH]

Coronary Thrombosis: Presence of a thrombus in a coronary artery, often causing a myocardial infarction. [NIH]

Corticosteroids: Hormones that have antitumor activity in lymphomas and lymphoid leukemias; in addition, corticosteroids (steroids) may be used for hormone replacement and for the management of some of the complications of cancer and its treatment. [NIH]

Cortisol: A steroid hormone secreted by the adrenal cortex as part of the body's response to stress. [NIH]

Cortisone: A natural steroid hormone produced in the adrenal gland. It can also be made in the laboratory. Cortisone reduces swelling and can suppress immune responses. [NIH]

Curative: Tending to overcome disease and promote recovery. [EU]

Cyanide: An extremely toxic class of compounds that can be lethal on inhaling or ingesting in minute quantities. [NIH]

Cyclamates: Salts and esters of cyclamic acid. [NIH]

Cyclic: Pertaining to or occurring in a cycle or cycles; the term is applied to chemical compounds that contain a ring of atoms in the nucleus. [EU]

Cystine: A covalently linked dimeric nonessential amino acid formed by the oxidation of cysteine. Two molecules of cysteine are joined together by a disulfide bridge to form cystine. [NIH]

Cytomegalovirus: A genus of the family Herpesviridae, subfamily Betaherpesvirinae, infecting the salivary glands, liver, spleen, lungs, eyes, and other organs, in which they produce characteristically enlarged cells with intranuclear inclusions. Infection with Cytomegalovirus is also seen as an opportunistic infection in AIDS. [NIH]

Cytoplasm: The protoplasm of a cell exclusive of that of the nucleus; it consists of a continuous aqueous solution (cytosol) and the organelles and inclusions suspended in it (phaneroplasm), and is the site of most of the chemical activities of the cell. [EU]

Dairy Products: Raw and processed or manufactured milk and milk-derived products. These are usually from cows (bovine) but are also from goats, sheep, reindeer, and water buffalo. [NIH]

Decarboxylation: The removal of a carboxyl group, usually in the form of carbon dioxide,

from a chemical compound. [NIH]

Degenerative: Undergoing degeneration : tending to degenerate; having the character of or involving degeneration; causing or tending to cause degeneration. [EU]

Deletion: A genetic rearrangement through loss of segments of DNA (chromosomes), bringing sequences, which are normally separated, into close proximity. [NIH]

Dental Caries: Localized destruction of the tooth surface initiated by decalcification of the enamel followed by enzymatic lysis of organic structures and leading to cavity formation. If left unchecked, the cavity may penetrate the enamel and dentin and reach the pulp. The three most prominent theories used to explain the etiology of the disease are that acids produced by bacteria lead to decalcification; that micro-organisms destroy the enamel protein; or that keratolytic micro-organisms produce chelates that lead to decalcification. [NIH]

Dermatitis: Any inflammation of the skin. [NIH]

Dermis: A layer of vascular connective tissue underneath the epidermis. The surface of the dermis contains sensitive papillae. Embedded in or beneath the dermis are sweat glands, hair follicles, and sebaceous glands. [NIH]

DES: Diethylstilbestrol. A synthetic hormone that was prescribed from the early 1940s until 1971 to help women with complications of pregnancy. DES has been linked to an increased risk of clear cell carcinoma of the vagina in daughters of women who used DES. DES may also increase the risk of breast cancer in women who used DES. [NIH]

Desquamation: The shedding of epithelial elements, chiefly of the skin, in scales or small sheets; exfoliation. [EU]

Deuterium: Deuterium. The stable isotope of hydrogen. It has one neutron and one proton in the nucleus. [NIH]

Developed Countries: Countries that have reached a level of economic achievement through an increase of production, per capita income and consumption, and utilization of natural and human resources. [NIH]

Diabetes Mellitus: A heterogeneous group of disorders that share glucose intolerance in common. [NIH]

Diagnostic procedure: A method used to identify a disease. [NIH]

Diarrhea: Passage of excessively liquid or excessively frequent stools. [NIH]

Diastolic: Of or pertaining to the diastole. [EU]

Dietary Fiber: The remnants of plant cell walls that are resistant to digestion by the alimentary enzymes of man. It comprises various polysaccharides and lignins. [NIH]

Digestion: The process of breakdown of food for metabolism and use by the body. [NIH]

Digestive tract: The organs through which food passes when food is eaten. These organs are the mouth, esophagus, stomach, small and large intestines, and rectum. [NIH]

Dilatation: The act of dilating. [NIH]

Diploid: Having two sets of chromosomes. [NIH]

Direct: 1. Straight; in a straight line. 2. Performed immediately and without the intervention of subsidiary means. [EU]

Disinfectant: An agent that disinfects; applied particularly to agents used on inanimate objects. [EU]

Diuresis: Increased excretion of urine. [EU]

Dopamine: An endogenous catecholamine and prominent neurotransmitter in several

systems of the brain. In the synthesis of catecholamines from tyrosine, it is the immediate precursor to norepinephrine and epinephrine. Dopamine is a major transmitter in the extrapyramidal system of the brain, and important in regulating movement. A family of dopaminergic receptor subtypes mediate its action. Dopamine is used pharmacologically for its direct (beta adrenergic agonist) and indirect (adrenergic releasing) sympathomimetic effects including its actions as an inotropic agent and as a renal vasodilator. [NIH]

Dosage Forms: Completed forms of the pharmaceutical preparation in which prescribed doses of medication are included. They are designed to resist action by gastric fluids, prevent vomiting and nausea, reduce or alleviate the undesirable taste and smells associated with oral administration, achieve a high concentration of drug at target site, or produce a delayed or long-acting drug effect. They include capsules, liniments, ointments, pharmaceutical solutions, powders, tablets, etc. [NIH]

Double-blind: Pertaining to a clinical trial or other experiment in which neither the subject nor the person administering treatment knows which treatment any particular subject is receiving. [EU]

Drosophila: A genus of small, two-winged flies containing approximately 900 described species. These organisms are the most extensively studied of all genera from the standpoint of genetics and cytology. [NIH]

Drug Interactions: The action of a drug that may affect the activity, metabolism, or toxicity of another drug. [NIH]

Drug Resistance: Diminished or failed response of an organism, disease or tissue to the intended effectiveness of a chemical or drug. It should be differentiated from drug tolerance which is the progressive diminution of the susceptibility of a human or animal to the effects of a drug, as a result of continued administration. [NIH]

Drug Tolerance: Progressive diminution of the susceptibility of a human or animal to the effects of a drug, resulting from its continued administration. It should be differentiated from drug resistance wherein an organism, disease, or tissue fails to respond to the intended effectiveness of a chemical or drug. It should also be differentiated from maximum tolerated dose and no-observed-adverse-effect level. [NIH]

Duodenum: The first part of the small intestine. [NIH]

Dyes: Chemical substances that are used to stain and color other materials. The coloring may or may not be permanent. Dyes can also be used as therapeutic agents and test reagents in medicine and scientific research. [NIH]

Edema: Excessive amount of watery fluid accumulated in the intercellular spaces, most commonly present in subcutaneous tissue. [NIH]

Elastic: Susceptible of resisting and recovering from stretching, compression or distortion applied by a force. [EU]

Elasticity: Resistance and recovery from distortion of shape. [NIH]

Electrolyte: A substance that dissociates into ions when fused or in solution, and thus becomes capable of conducting electricity; an ionic solute. [EU]

Electrophoresis: An electrochemical process in which macromolecules or colloidal particles with a net electric charge migrate in a solution under the influence of an electric current. [NIH]

Embryo: The prenatal stage of mammalian development characterized by rapid morphological changes and the differentiation of basic structures. [NIH]

Emulsions: Colloids of two immiscible liquids where either phase may be either fatty or aqueous; lipid-in-water emulsions are usually liquid, like milk or lotion and water-in-lipid

emulsions tend to be creams. [NIH]

Enamel: A very hard whitish substance which covers the dentine of the anatomical crown of a tooth. [NIH]

Endogenous: Produced inside an organism or cell. The opposite is external (exogenous) production. [NIH]

Enhancers: Transcriptional element in the virus genome. [NIH]

Enteritis: Inflammation of the intestine, applied chiefly to inflammation of the small intestine; see also enterocolitis. [EU]

Enterocolitis: Inflammation of the intestinal mucosa of the small and large bowel. [NIH]

Environmental Health: The science of controlling or modifying those conditions, influences, or forces surrounding man which relate to promoting, establishing, and maintaining health. [NIH]

Enzymatic: Phase where enzyme cuts the precursor protein. [NIH]

Enzyme: A protein that speeds up chemical reactions in the body. [NIH]

Epinephrine: The active sympathomimetic hormone from the adrenal medulla in most species. It stimulates both the alpha- and beta- adrenergic systems, causes systemic vasoconstriction and gastrointestinal relaxation, stimulates the heart, and dilates bronchi and cerebral vessels. It is used in asthma and cardiac failure and to delay absorption of local anesthetics. [NIH]

Epithelial: Refers to the cells that line the internal and external surfaces of the body. [NIH]

Epithelial Cells: Cells that line the inner and outer surfaces of the body. [NIH]

Epithelium: One or more layers of epithelial cells, supported by the basal lamina, which covers the inner or outer surfaces of the body. [NIH]

Ergot: Cataract due to ergot poisoning caused by eating of rye cereals contaminated by a fungus. [NIH]

Erythema: Redness of the skin produced by congestion of the capillaries. This condition may result from a variety of causes. [NIH]

Esophagus: The muscular tube through which food passes from the throat to the stomach. [NIH]

Estrogen: One of the two female sex hormones. [NIH]

Ethanol: A clear, colorless liquid rapidly absorbed from the gastrointestinal tract and distributed throughout the body. It has bactericidal activity and is used often as a topical disinfectant. It is widely used as a solvent and preservative in pharmaceutical preparations as well as serving as the primary ingredient in alcoholic beverages. [NIH]

Excipient: Any more or less inert substance added to a prescription in order to confer a suitable consistency or form to the drug; a vehicle. [EU]

Exfoliation: A falling off in scales or layers. [EU]

Exocytosis: Cellular release of material within membrane-limited vesicles by fusion of the vesicles with the cell membrane. [NIH]

Exogenous: Developed or originating outside the organism, as exogenous disease. [EU]

External-beam radiation: Radiation therapy that uses a machine to aim high-energy rays at the cancer. Also called external radiation. [NIH]

Extracellular: Outside a cell or cells. [EU]

Extracellular Matrix: A meshwork-like substance found within the extracellular space and

in association with the basement membrane of the cell surface. It promotes cellular proliferation and provides a supporting structure to which cells or cell lysates in culture dishes adhere. [NIH]

Extraction: The process or act of pulling or drawing out. [EU]

Extrapyramidal: Outside of the pyramidal tracts. [EU]

Exudate: Material, such as fluid, cells, or cellular debris, which has escaped from blood vessels and has been deposited in tissues or on tissue surfaces, usually as a result of inflammation. An exudate, in contrast to a transudate, is characterized by a high content of protein, cells, or solid materials derived from cells. [EU]

Facial: Of or pertaining to the face. [EU]

Facial Nerve: The 7th cranial nerve. The facial nerve has two parts, the larger motor root which may be called the facial nerve proper, and the smaller intermediate or sensory root. Together they provide efferent innervation to the muscles of facial expression and to the lacrimal and salivary glands, and convey afferent information for taste from the anterior two-thirds of the tongue and for touch from the external ear. [NIH]

Failure to Thrive: A condition in which an infant or child's weight gain and growth are far below usual levels for age. [NIH]

Family Planning: Programs or services designed to assist the family in controlling reproduction by either improving or diminishing fertility. [NIH]

Fat: Total lipids including phospholipids. [NIH]

Fatty acids: A major component of fats that are used by the body for energy and tissue development. [NIH]

Febrile: Pertaining to or characterized by fever. [EU]

Feces: The excrement discharged from the intestines, consisting of bacteria, cells exfoliated from the intestines, secretions, chiefly of the liver, and a small amount of food residue. [EU]

Fertilizers: Substances or mixtures that are added to the soil to supply nutrients or to make available nutrients already present in the soil, in order to increase plant growth and productivity. [NIH]

Fetal Alcohol Syndrome: A disorder occurring in children born to alcoholic women who continue to drink heavily during pregnancy. Common abnormalities are growth deficiency (prenatal and postnatal), altered morphogenesis, mental deficiency, and characteristic facies - small eyes and flattened nasal bridge. Fine motor dysfunction and tremulousness are observed in the newborn. [NIH]

Fibrosis: Any pathological condition where fibrous connective tissue invades any organ, usually as a consequence of inflammation or other injury. [NIH]

Flatus: Gas passed through the rectum. [NIH]

Flavoring Agents: Substances added to foods and medicine to improve the quality of taste. [NIH]

Fluid Therapy: Therapy whose basic objective is to restore the volume and composition of the body fluids to normal with respect to water-electrolyte balance. Fluids may be administered intravenously, orally, by intermittent gavage, or by hypodermoclysis. [NIH]

Fold: A plication or doubling of various parts of the body. [NIH]

Food Hypersensitivity: Gastrointestinal disturbances, skin eruptions, or shock due to allergic reactions to allergens ingested in food. [NIH]

Food Preservatives: Substances capable of inhibiting, retarding or arresting the process of

fermentation, acidification or other deterioration of foods. [NIH]

Foodborne Illness: An acute gastrointestinal infection caused by food that contains harmful bacteria. Symptoms include diarrhea, abdominal pain, fever, and chills. Also called food poisoning. [NIH]

Fraud: Exploitation through misrepresentation of the facts or concealment of the purposes of the exploiter. [NIH]

Free Radicals: Highly reactive molecules with an unsatisfied electron valence pair. Free radicals are produced in both normal and pathological processes. They are proven or suspected agents of tissue damage in a wide variety of circumstances including radiation, damage from environment chemicals, and aging. Natural and pharmacological prevention of free radical damage is being actively investigated. [NIH]

Freeze Drying: Method of tissue preparation in which the tissue specimen is frozen and then dehydrated at low temperature in a high vacuum. This method is also used for dehydrating pharmaceutical and food products. [NIH]

Fungi: A kingdom of eukaryotic, heterotrophic organisms that live as saprobes or parasites, including mushrooms, yeasts, smuts, molds, etc. They reproduce either sexually or asexually, and have life cycles that range from simple to complex. Filamentous fungi refer to those that grow as multicellular colonies (mushrooms and molds). [NIH]

Fungicides, Industrial: Chemicals that kill or inhibit the growth of fungi in agricultural applications, on wood, plastics, or other materials, in swimming pools, etc. [NIH]

Fungistatic: Inhibiting the growth of fungi. [EU]

Fungus: A general term used to denote a group of eukaryotic protists, including mushrooms, yeasts, rusts, moulds, smuts, etc., which are characterized by the absence of chlorophyll and by the presence of a rigid cell wall composed of chitin, mannans, and sometimes cellulose. They are usually of simple morphological form or show some reversible cellular specialization, such as the formation of pseudoparenchymatous tissue in the fruiting body of a mushroom. The dimorphic fungi grow, according to environmental conditions, as moulds or yeasts. [EU]

Galactosemia: Buildup of galactose in the blood. Caused by lack of one of the enzymes needed to break down galactose into glucose. [NIH]

Gallbladder: The pear-shaped organ that sits below the liver. Bile is concentrated and stored in the gallbladder. [NIH]

Gallic Acid: A colorless or slightly yellow crystalline compound obtained from nutgalls. It is used in photography, pharmaceuticals, and as an analytical reagent. [NIH]

Gallstones: The solid masses or stones made of cholesterol or bilirubin that form in the gallbladder or bile ducts. [NIH]

Ganglia: Clusters of multipolar neurons surrounded by a capsule of loosely organized connective tissue located outside the central nervous system. [NIH]

Gas: Air that comes from normal breakdown of food. The gases are passed out of the body through the rectum (flatus) or the mouth (burp). [NIH]

Gastric: Having to do with the stomach. [NIH]

Gastrin: A hormone released after eating. Gastrin causes the stomach to produce more acid. [NIH]

Gastrointestinal: Refers to the stomach and intestines. [NIH]

Gastrointestinal tract: The stomach and intestines. [NIH]

Gavage: Feeding by a tube passed into the stomach; called also tube feeding. [NIH]

Gels: Colloids with a solid continuous phase and liquid as the dispersed phase; gels may be unstable when, due to temperature or other cause, the solid phase liquifies; the resulting colloid is called a sol. [NIH]

Gene: The functional and physical unit of heredity passed from parent to offspring. Genes are pieces of DNA, and most genes contain the information for making a specific protein. [NIH]

Genetic Code: The specifications for how information, stored in nucleic acid sequence (base sequence), is translated into protein sequence (amino acid sequence). The start, stop, and order of amino acids of a protein is specified by consecutive triplets of nucleotides called codons (codon). [NIH]

Genetics: The biological science that deals with the phenomena and mechanisms of heredity. [NIH]

Genital: Pertaining to the genitalia. [EU]

Genitourinary: Pertaining to the genital and urinary organs; urogenital; urinosexual. [EU]

Ginger: Deciduous plant rich in volatile oil (oils, volatile). It is used as a flavoring agent and has many other uses both internally and topically. [NIH]

Gland: An organ that produces and releases one or more substances for use in the body. Some glands produce fluids that affect tissues or organs. Others produce hormones or participate in blood production. [NIH]

Glossopharyngeal Nerve: The 9th cranial nerve. The glossopharyngeal nerve is a mixed motor and sensory nerve; it conveys somatic and autonomic efferents as well as general, special, and visceral afferents. Among the connections are motor fibers to the stylopharyngeus muscle, parasympathetic fibers to the parotid glands, general and taste afferents from the posterior third of the tongue, the nasopharynx, and the palate, and afferents from baroreceptors and chemoreceptors of the carotid sinus. [NIH]

Glucocorticoid: A compound that belongs to the family of compounds called corticosteroids (steroids). Glucocorticoids affect metabolism and have anti-inflammatory and immunosuppressive effects. They may be naturally produced (hormones) or synthetic (drugs). [NIH]

Glucose: D-Glucose. A primary source of energy for living organisms. It is naturally occurring and is found in fruits and other parts of plants in its free state. It is used therapeutically in fluid and nutrient replacement. [NIH]

Glucose Intolerance: A pathological state in which the fasting plasma glucose level is less than 140 mg per deciliter and the 30-, 60-, or 90-minute plasma glucose concentration following a glucose tolerance test exceeds 200 mg per deciliter. This condition is seen frequently in diabetes mellitus but also occurs with other diseases. [NIH]

Glutamate: Excitatory neurotransmitter of the brain. [NIH]

Gluten: The protein of wheat and other grains which gives to the dough its tough elastic character. [EU]

Glycine: A non-essential amino acid. It is found primarily in gelatin and silk fibroin and used therapeutically as a nutrient. It is also a fast inhibitory neurotransmitter. [NIH]

Glycosidic: Formed by elimination of water between the anomeric hydroxyl of one sugar and a hydroxyl of another sugar molecule. [NIH]

Goats: Any of numerous agile, hollow-horned ruminants of the genus *Capra*, closely related to the sheep. [NIH]

Gonadal: Pertaining to a gonad. [EU]

Governing Board: The group in which legal authority is vested for the control of health-related institutions and organizations. [NIH]

Government Agencies: Administrative units of government responsible for policy making and management of governmental activities in the U.S. and abroad. [NIH]

Gram-negative: Losing the stain or decolorized by alcohol in Gram's method of staining, a primary characteristic of bacteria having a cell wall composed of a thin layer of peptidoglycan covered by an outer membrane of lipoprotein and lipopolysaccharide. [EU]

Gram-positive: Retaining the stain or resisting decolorization by alcohol in Gram's method of staining, a primary characteristic of bacteria whose cell wall is composed of a thick layer of peptidoglycan with attached teichoic acids. [EU]

Growth: The progressive development of a living being or part of an organism from its earliest stage to maturity. [NIH]

Half-Life: The time it takes for a substance (drug, radioactive nuclide, or other) to lose half of its pharmacologic, physiologic, or radiologic activity. [NIH]

Haploid: An organism with one basic chromosome set, symbolized by n ; the normal condition of gametes in diploids. [NIH]

Headache: Pain in the cranial region that may occur as an isolated and benign symptom or as a manifestation of a wide variety of conditions including subarachnoid hemorrhage; craniocerebral trauma; central nervous system infections; intracranial hypertension; and other disorders. In general, recurrent headaches that are not associated with a primary disease process are referred to as headache disorders (e.g., migraine). [NIH]

Hearing Disorders: Conditions that impair the transmission or perception of auditory impulses and information from the level of the ear to the temporal cortices, including the sensorineural pathways. [NIH]

Heart attack: A seizure of weak or abnormal functioning of the heart. [NIH]

Hemoglobin: One of the fractions of glycosylated hemoglobin A1c. Glycosylated hemoglobin is formed when linkages of glucose and related monosaccharides bind to hemoglobin A and its concentration represents the average blood glucose level over the previous several weeks. HbA1c levels are used as a measure of long-term control of plasma glucose (normal, 4 to 6 percent). In controlled diabetes mellitus, the concentration of glycosylated hemoglobin A is within the normal range, but in uncontrolled cases the level may be 3 to 4 times the normal concentration. Generally, complications are substantially lower among patients with Hb levels of 7 percent or less than in patients with HbA1c levels of 9 percent or more. [NIH]

Hemoglobin A: Normal adult human hemoglobin. The globin moiety consists of two alpha and two beta chains. [NIH]

Hepatic: Refers to the liver. [NIH]

Heredity: 1. The genetic transmission of a particular quality or trait from parent to offspring. 2. The genetic constitution of an individual. [EU]

Histamine: 1H-Imidazole-4-ethanamine. A depressor amine derived by enzymatic decarboxylation of histidine. It is a powerful stimulant of gastric secretion, a constrictor of bronchial smooth muscle, a vasodilator, and also a centrally acting neurotransmitter. [NIH]

Histamine Release: The secretion of histamine from mast cell and basophil granules by exocytosis. This can be initiated by a number of factors, all of which involve binding of IgE, cross-linked by antigen, to the mast cell or basophil's Fc receptors. Once released, histamine binds to a number of different target cell receptors and exerts a wide variety of effects. [NIH]

Histidine: An essential amino acid important in a number of metabolic processes. It is required for the production of histamine. [NIH]

Hormone: A substance in the body that regulates certain organs. Hormones such as gastrin help in breaking down food. Some hormones come from cells in the stomach and small intestine. [NIH]

Host: Any animal that receives a transplanted graft. [NIH]

Hybrid: Cross fertilization between two varieties or, more usually, two species of vines, see also crossing. [NIH]

Hydrocortisone: The main glucocorticoid secreted by the adrenal cortex. Its synthetic counterpart is used, either as an injection or topically, in the treatment of inflammation, allergy, collagen diseases, asthma, adrenocortical deficiency, shock, and some neoplastic conditions. [NIH]

Hydrogen: The first chemical element in the periodic table. It has the atomic symbol H, atomic number 1, and atomic weight 1. It exists, under normal conditions, as a colorless, odorless, tasteless, diatomic gas. Hydrogen ions are protons. Besides the common H1 isotope, hydrogen exists as the stable isotope deuterium and the unstable, radioactive isotope tritium. [NIH]

Hydrogen Peroxide: A strong oxidizing agent used in aqueous solution as a ripening agent, bleach, and topical anti-infective. It is relatively unstable and solutions deteriorate over time unless stabilized by the addition of acetanilide or similar organic materials. [NIH]

Hydrophobic: Not readily absorbing water, or being adversely affected by water, as a hydrophobic colloid. [EU]

Hydroxyproline: A hydroxylated form of the imino acid proline. A deficiency in ascorbic acid can result in impaired hydroxyproline formation. [NIH]

Hyperbilirubinemia: Pathologic process consisting of an abnormal increase in the amount of bilirubin in the circulating blood, which may result in jaundice. [NIH]

Hyperkinesis: Excessive movement of muscles of the body as a whole, which may be associated with organic or psychological disorders. [NIH]

Hyperlipidemia: An excess of lipids in the blood. [NIH]

Hypersensitivity: Altered reactivity to an antigen, which can result in pathologic reactions upon subsequent exposure to that particular antigen. [NIH]

Hypertension: Persistently high arterial blood pressure. Currently accepted threshold levels are 140 mm Hg systolic and 90 mm Hg diastolic pressure. [NIH]

Hypervitaminosis: A condition due to ingestion of an excess of one or more vitamins; called also supervitaminosis. [EU]

Hypoglycemia: Abnormally low blood sugar [NIH]

Ibuprofen: A nonsteroidal anti-inflammatory agent with analgesic properties used in the therapy of rheumatism and arthritis. [NIH]

Ice Cream: A frozen dairy food made from cream or butterfat, milk, sugar, and flavorings. Frozen custard and French-type ice creams also contain eggs. [NIH]

Id: The part of the personality structure which harbors the unconscious instinctive desires and strivings of the individual. [NIH]

Immune response: The activity of the immune system against foreign substances (antigens). [NIH]

Immune system: The organs, cells, and molecules responsible for the recognition and

disposal of foreign ("non-self") material which enters the body. [NIH]

Immunity: Nonsusceptibility to the invasive or pathogenic effects of foreign microorganisms or to the toxic effect of antigenic substances. [NIH]

Immunosuppressive: Describes the ability to lower immune system responses. [NIH]

Impairment: In the context of health experience, an impairment is any loss or abnormality of psychological, physiological, or anatomical structure or function. [NIH]

Implant radiation: A procedure in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near the tumor. Also called [NIH]

In vitro: In the laboratory (outside the body). The opposite of in vivo (in the body). [NIH]

In vivo: In the body. The opposite of in vitro (outside the body or in the laboratory). [NIH]

Indigestion: Poor digestion. Symptoms include heartburn, nausea, bloating, and gas. Also called dyspepsia. [NIH]

Infant Nutrition: Nutrition of children from birth to 2 years of age. [NIH]

Infarction: A pathological process consisting of a sudden insufficient blood supply to an area, which results in necrosis of that area. It is usually caused by a thrombus, an embolus, or a vascular torsion. [NIH]

Infection: 1. Invasion and multiplication of microorganisms in body tissues, which may be clinically unapparent or result in local cellular injury due to competitive metabolism, toxins, intracellular replication, or antigen-antibody response. The infection may remain localized, subclinical, and temporary if the body's defensive mechanisms are effective. A local infection may persist and spread by extension to become an acute, subacute, or chronic clinical infection or disease state. A local infection may also become systemic when the microorganisms gain access to the lymphatic or vascular system. 2. An infectious disease. [EU]

Inflammation: A pathological process characterized by injury or destruction of tissues caused by a variety of cytologic and chemical reactions. It is usually manifested by typical signs of pain, heat, redness, swelling, and loss of function. [NIH]

Ingestion: Taking into the body by mouth [NIH]

Inhalation: The drawing of air or other substances into the lungs. [EU]

Inorganic: Pertaining to substances not of organic origin. [EU]

Inotropic: Affecting the force or energy of muscular contractions. [EU]

Insecticides: Pesticides designed to control insects that are harmful to man. The insects may be directly harmful, as those acting as disease vectors, or indirectly harmful, as destroyers of crops, food products, or textile fabrics. [NIH]

Intermittent: Occurring at separated intervals; having periods of cessation of activity. [EU]

Internal radiation: A procedure in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near the tumor. Also called brachytherapy, implant radiation, or interstitial radiation therapy. [NIH]

Interstitial: Pertaining to or situated between parts or in the interspaces of a tissue. [EU]

Intestinal: Having to do with the intestines. [NIH]

Intestinal Flora: The bacteria, yeasts, and fungi that grow normally in the intestines. [NIH]

Intestine: A long, tube-shaped organ in the abdomen that completes the process of digestion. There is both a large intestine and a small intestine. Also called the bowel. [NIH]

Intoxication: Poisoning, the state of being poisoned. [EU]

Intracellular: Inside a cell. [NIH]

Intramuscular: IM. Within or into muscle. [NIH]

Intravenous: IV. Into a vein. [NIH]

Intrinsic: Situated entirely within or pertaining exclusively to a part. [EU]

Invasive: 1. Having the quality of invasiveness. 2. Involving puncture or incision of the skin or insertion of an instrument or foreign material into the body; said of diagnostic techniques. [EU]

Ionizing: Radiation comprising charged particles, e. g. electrons, protons, alpha-particles, etc., having sufficient kinetic energy to produce ionization by collision. [NIH]

Ions: An atom or group of atoms that have a positive or negative electric charge due to a gain (negative charge) or loss (positive charge) of one or more electrons. Atoms with a positive charge are known as cations; those with a negative charge are anions. [NIH]

Irradiation: The use of high-energy radiation from x-rays, neutrons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy) or from materials called radioisotopes. Radioisotopes produce radiation and can be placed in or near the tumor or in the area near cancer cells. This type of radiation treatment is called internal radiation therapy, implant radiation, interstitial radiation, or brachytherapy. Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. Irradiation is also called radiation therapy, radiotherapy, and x-ray therapy. [NIH]

Jaundice: A clinical manifestation of hyperbilirubinemia, consisting of deposition of bile pigments in the skin, resulting in a yellowish staining of the skin and mucous membranes. [NIH]

Joint: The point of contact between elements of an animal skeleton with the parts that surround and support it. [NIH]

Kb: A measure of the length of DNA fragments, 1 Kb = 1000 base pairs. The largest DNA fragments are up to 50 kilobases long. [NIH]

Keratolytic: An agent that promotes keratolysis. [EU]

Kinetic: Pertaining to or producing motion. [EU]

Labile: 1. Gliding; moving from point to point over the surface; unstable; fluctuating. 2. Chemically unstable. [EU]

Lactose Intolerance: The disease state resulting from the absence of lactase enzyme in the mucosal cells of the gastrointestinal tract, and therefore an inability to break down the disaccharide lactose in milk for absorption from the gastrointestinal tract. It is manifested by indigestion of a mild nature to severe diarrhea. It may be due to inborn defect genetically conditioned or may be acquired. [NIH]

Language Disorders: Conditions characterized by deficiencies of comprehension or expression of written and spoken forms of language. These include acquired and developmental disorders. [NIH]

Large Intestine: The part of the intestine that goes from the cecum to the rectum. The large intestine absorbs water from stool and changes it from a liquid to a solid form. The large intestine is 5 feet long and includes the appendix, cecum, colon, and rectum. Also called colon. [NIH]

Laxative: An agent that acts to promote evacuation of the bowel; a cathartic or purgative. [EU]

Lead Poisoning: Disease caused by the gradual accumulation of a significant body burden

of lead. [NIH]

Lethal: Deadly, fatal. [EU]

Leukotrienes: A family of biologically active compounds derived from arachidonic acid by oxidative metabolism through the 5-lipoxygenase pathway. They participate in host defense reactions and pathophysiological conditions such as immediate hypersensitivity and inflammation. They have potent actions on many essential organs and systems, including the cardiovascular, pulmonary, and central nervous system as well as the gastrointestinal tract and the immune system. [NIH]

Library Services: Services offered to the library user. They include reference and circulation. [NIH]

Life Expectancy: A figure representing the number of years, based on known statistics, to which any person of a given age may reasonably expect to live. [NIH]

Lipid: Fat. [NIH]

Lipophilic: Having an affinity for fat; pertaining to or characterized by lipophilia. [EU]

Lipoxygenase: An enzyme of the oxidoreductase class that catalyzes reactions between linoleate and other fatty acids and oxygen to form hydroperoxy-fatty acid derivatives. Related enzymes in this class include the arachidonate lipoxygenases, arachidonate 5-lipoxygenase, arachidonate 12-lipoxygenase, and arachidonate 15-lipoxygenase. EC 1.13.11.12. [NIH]

Liver: A large, glandular organ located in the upper abdomen. The liver cleanses the blood and aids in digestion by secreting bile. [NIH]

Localized: Cancer which has not metastasized yet. [NIH]

Locomotion: Movement or the ability to move from one place or another. It can refer to humans, vertebrate or invertebrate animals, and microorganisms. [NIH]

Loop: A wire usually of platinum bent at one end into a small loop (usually 4 mm inside diameter) and used in transferring microorganisms. [NIH]

Lubricants: Oily or slippery substances. [NIH]

Lymph: The almost colorless fluid that travels through the lymphatic system and carries cells that help fight infection and disease. [NIH]

Lymph node: A rounded mass of lymphatic tissue that is surrounded by a capsule of connective tissue. Also known as a lymph gland. Lymph nodes are spread out along lymphatic vessels and contain many lymphocytes, which filter the lymphatic fluid (lymph). [NIH]

Lymphatic: The tissues and organs, including the bone marrow, spleen, thymus, and lymph nodes, that produce and store cells that fight infection and disease. [NIH]

Lymphatic system: The tissues and organs that produce, store, and carry white blood cells that fight infection and other diseases. This system includes the bone marrow, spleen, thymus, lymph nodes and a network of thin tubes that carry lymph and white blood cells. These tubes branch, like blood vessels, into all the tissues of the body. [NIH]

Lymphocyte: A white blood cell. Lymphocytes have a number of roles in the immune system, including the production of antibodies and other substances that fight infection and diseases. [NIH]

Lymphoid: Referring to lymphocytes, a type of white blood cell. Also refers to tissue in which lymphocytes develop. [NIH]

Lymphoma: A general term for various neoplastic diseases of the lymphoid tissue. [NIH]

Malabsorption: Impaired intestinal absorption of nutrients. [EU]

Malignant: Cancerous; a growth with a tendency to invade and destroy nearby tissue and spread to other parts of the body. [NIH]

Mammary: Pertaining to the mamma, or breast. [EU]

Meat: The edible portions of any animal used for food including domestic mammals (the major ones being cattle, swine, and sheep) along with poultry, fish, shellfish, and game. [NIH]

Mediate: Indirect; accomplished by the aid of an intervening medium. [EU]

MEDLINE: An online database of MEDLARS, the computerized bibliographic Medical Literature Analysis and Retrieval System of the National Library of Medicine. [NIH]

Melanin: The substance that gives the skin its color. [NIH]

Membrane: A very thin layer of tissue that covers a surface. [NIH]

Membrane Potentials: Ratio of inside versus outside concentration of potassium, sodium, chloride and other ions in diffusible tissues or cells. Also called transmembrane and resting potentials, they are measured by recording electrophysiologic responses in voltage-dependent ionic channels of (e.g.) nerve, muscle and blood cells as well as artificial membranes. [NIH]

Meninges: The three membranes that cover and protect the brain and spinal cord. [NIH]

Mental: Pertaining to the mind; psychic. 2. (L. mentum chin) pertaining to the chin. [EU]

Mental deficiency: A condition of arrested or incomplete development of mind from inherent causes or induced by disease or injury. [NIH]

Mental Retardation: Refers to sub-average general intellectual functioning which originated during the developmental period and is associated with impairment in adaptive behavior. [NIH]

Metabolite: Any substance produced by metabolism or by a metabolic process. [EU]

Methionine: A sulfur containing essential amino acid that is important in many body functions. It is a chelating agent for heavy metals. [NIH]

MI: Myocardial infarction. Gross necrosis of the myocardium as a result of interruption of the blood supply to the area; it is almost always caused by atherosclerosis of the coronary arteries, upon which coronary thrombosis is usually superimposed. [NIH]

Micelle: A colloid particle formed by an aggregation of small molecules. [EU]

Microbe: An organism which cannot be observed with the naked eye; e. g. unicellular animals, lower algae, lower fungi, bacteria. [NIH]

Micronutrients: Essential dietary elements or organic compounds that are required in only small quantities for normal physiologic processes to occur. [NIH]

Microorganism: An organism that can be seen only through a microscope. Microorganisms include bacteria, protozoa, algae, and fungi. Although viruses are not considered living organisms, they are sometimes classified as microorganisms. [NIH]

Micro-organism: An organism which cannot be observed with the naked eye; e. g. unicellular animals, lower algae, lower fungi, bacteria. [NIH]

Mineralocorticoids: A group of corticosteroids primarily associated with the regulation of water and electrolyte balance. This is accomplished through the effect on ion transport in renal tubules, resulting in retention of sodium and loss of potassium. Mineralocorticoid secretion is itself regulated by plasma volume, serum potassium, and angiotensin II. [NIH]

Mitosis: A method of indirect cell division by means of which the two daughter nuclei normally receive identical complements of the number of chromosomes of the somatic cells of the species. [NIH]

Modification: A change in an organism, or in a process in an organism, that is acquired from its own activity or environment. [NIH]

Molecular: Of, pertaining to, or composed of molecules : a very small mass of matter. [EU]

Molecular Structure: The location of the atoms, groups or ions relative to one another in a molecule, as well as the number, type and location of covalent bonds. [NIH]

Molecule: A chemical made up of two or more atoms. The atoms in a molecule can be the same (an oxygen molecule has two oxygen atoms) or different (a water molecule has two hydrogen atoms and one oxygen atom). Biological molecules, such as proteins and DNA, can be made up of many thousands of atoms. [NIH]

Monoamine: Enzyme that breaks down dopamine in the astrocytes and microglia. [NIH]

Monoamine Oxidase: An enzyme that catalyzes the oxidative deamination of naturally occurring monoamines. It is a flavin-containing enzyme that is localized in mitochondrial membranes, whether in nerve terminals, the liver, or other organs. Monoamine oxidase is important in regulating the metabolic degradation of catecholamines and serotonin in neural or target tissues. Hepatic monoamine oxidase has a crucial defensive role in inactivating circulating monoamines or those, such as tyramine, that originate in the gut and are absorbed into the portal circulation. (From Goodman and Gilman's, The Pharmacological Basis of Therapeutics, 8th ed, p415) EC 1.4.3.4. [NIH]

Monoclonal: An antibody produced by culturing a single type of cell. It therefore consists of a single species of immunoglobulin molecules. [NIH]

Morphogenesis: The development of the form of an organ, part of the body, or organism. [NIH]

Mucins: A secretion containing mucopolysaccharides and protein that is the chief constituent of mucus. [NIH]

Mucosa: A mucous membrane, or tunica mucosa. [EU]

Muscle Fibers: Large single cells, either cylindrical or prismatic in shape, that form the basic unit of muscle tissue. They consist of a soft contractile substance enclosed in a tubular sheath. [NIH]

Mutagenic: Inducing genetic mutation. [EU]

Mutagenicity: Ability to damage DNA, the genetic material; the power to cause mutations. [NIH]

Mutagenicity Tests: Tests of chemical substances and physical agents for mutagenic potential. They include microbial, insect, mammalian cell, and whole animal tests. [NIH]

Mycotoxins: Toxins derived from bacteria or fungi. [NIH]

Myocardium: The muscle tissue of the heart composed of striated, involuntary muscle known as cardiac muscle. [NIH]

Nausea: An unpleasant sensation in the stomach usually accompanied by the urge to vomit. Common causes are early pregnancy, sea and motion sickness, emotional stress, intense pain, food poisoning, and various enteroviruses. [NIH]

Need: A state of tension or dissatisfaction felt by an individual that impels him to action toward a goal he believes will satisfy the impulse. [NIH]

Neoplasms: New abnormal growth of tissue. Malignant neoplasms show a greater degree of anaplasia and have the properties of invasion and metastasis, compared to benign neoplasms. [NIH]

Neoplastic: Pertaining to or like a neoplasm (= any new and abnormal growth); pertaining to neoplasia (= the formation of a neoplasm). [EU]

Nerve: A cordlike structure of nervous tissue that connects parts of the nervous system with other tissues of the body and conveys nervous impulses to, or away from, these tissues. [NIH]

Nervous System: The entire nerve apparatus composed of the brain, spinal cord, nerves and ganglia. [NIH]

Networks: Pertaining to a nerve or to the nerves, a meshlike structure of interlocking fibers or strands. [NIH]

Neurotoxic: Poisonous or destructive to nerve tissue. [EU]

Neurotoxins: Toxic substances from microorganisms, plants or animals that interfere with the functions of the nervous system. Most venoms contain neurotoxic substances. Myotoxins are included in this concept. [NIH]

Neurotransmitter: Any of a group of substances that are released on excitation from the axon terminal of a presynaptic neuron of the central or peripheral nervous system and travel across the synaptic cleft to either excite or inhibit the target cell. Among the many substances that have the properties of a neurotransmitter are acetylcholine, norepinephrine, epinephrine, dopamine, glycine, γ -aminobutyrate, glutamic acid, substance P, enkephalins, endorphins, and serotonin. [EU]

Neutral Red: A vital dye used as an indicator and biological stain. Various adverse effects have been observed in biological systems. [NIH]

Neutrons: Electrically neutral elementary particles found in all atomic nuclei except light hydrogen; the mass is equal to that of the proton and electron combined and they are unstable when isolated from the nucleus, undergoing beta decay. Slow, thermal, epithermal, and fast neutrons refer to the energy levels with which the neutrons are ejected from heavier nuclei during their decay. [NIH]

Nitrogen: An element with the atomic symbol N, atomic number 7, and atomic weight 14. Nitrogen exists as a diatomic gas and makes up about 78% of the earth's atmosphere by volume. It is a constituent of proteins and nucleic acids and found in all living cells. [NIH]

Nitrosamines: A class of compounds that contain a $-NH_2$ and a $-NO$ radical. Many members of this group have carcinogenic and mutagenic properties. [NIH]

Nonverbal Communication: Transmission of emotions, ideas, and attitudes between individuals in ways other than the spoken language. [NIH]

Norepinephrine: Precursor of epinephrine that is secreted by the adrenal medulla and is a widespread central and autonomic neurotransmitter. Norepinephrine is the principal transmitter of most postganglionic sympathetic fibers and of the diffuse projection system in the brain arising from the locus ceruleus. It is also found in plants and is used pharmacologically as a sympathomimetic. [NIH]

Nuclei: A body of specialized protoplasm found in nearly all cells and containing the chromosomes. [NIH]

Nucleic acid: Either of two types of macromolecule (DNA or RNA) formed by polymerization of nucleotides. Nucleic acids are found in all living cells and contain the information (genetic code) for the transfer of genetic information from one generation to the next. [NIH]

Nucleus: A body of specialized protoplasm found in nearly all cells and containing the chromosomes. [NIH]

Nutritional Status: State of the body in relation to the consumption and utilization of nutrients. [NIH]

Nutritive Value: An indication of the contribution of a food to the nutrient content of the

diet. This value depends on the quantity of a food which is digested and absorbed and the amounts of the essential nutrients (protein, fat, carbohydrate, minerals, vitamins) which it contains. This value can be affected by soil and growing conditions, handling and storage, and processing. [NIH]

Odour: A volatile emanation that is perceived by the sense of smell. [EU]

Ointments: Semisolid preparations used topically for protective emollient effects or as a vehicle for local administration of medications. Ointment bases are various mixtures of fats, waxes, animal and plant oils and solid and liquid hydrocarbons. [NIH]

Oral Health: The optimal state of the mouth and normal functioning of the organs of the mouth without evidence of disease. [NIH]

Osteoarthritis: A progressive, degenerative joint disease, the most common form of arthritis, especially in older persons. The disease is thought to result not from the aging process but from biochemical changes and biomechanical stresses affecting articular cartilage. In the foreign literature it is often called osteoarthrosis deformans. [NIH]

Osteoporosis: Reduction of bone mass without alteration in the composition of bone, leading to fractures. Primary osteoporosis can be of two major types: postmenopausal osteoporosis and age-related (or senile) osteoporosis. [NIH]

Oxidants: Oxidizing agents or electron-accepting molecules in chemical reactions in which electrons are transferred from one molecule to another (oxidation-reduction). In vivo, it appears that phagocyte-generated oxidants function as tumor promoters or cocarcinogens rather than as complete carcinogens perhaps because of the high levels of endogenous antioxidant defenses. It is also thought that oxidative damage in joints may trigger the autoimmune response that characterizes the persistence of the rheumatoid disease process. [NIH]

Oxidation: The act of oxidizing or state of being oxidized. Chemically it consists in the increase of positive charges on an atom or the loss of negative charges. Most biological oxidations are accomplished by the removal of a pair of hydrogen atoms (dehydrogenation) from a molecule. Such oxidations must be accompanied by reduction of an acceptor molecule. Univalent o. indicates loss of one electron; divalent o., the loss of two electrons. [EU]

Oxidation-Reduction: A chemical reaction in which an electron is transferred from one molecule to another. The electron-donating molecule is the reducing agent or reductant; the electron-accepting molecule is the oxidizing agent or oxidant. Reducing and oxidizing agents function as conjugate reductant-oxidant pairs or redox pairs (Lehninger, Principles of Biochemistry, 1982, p471). [NIH]

Oxidative metabolism: A chemical process in which oxygen is used to make energy from carbohydrates (sugars). Also known as aerobic respiration, cell respiration, or aerobic metabolism. [NIH]

Palate: The structure that forms the roof of the mouth. It consists of the anterior hard palate and the posterior soft palate. [NIH]

Palliative: 1. Affording relief, but not cure. 2. An alleviating medicine. [EU]

Parenteral: Not through the alimentary canal but rather by injection through some other route, as subcutaneous, intramuscular, intraorbital, intracapsular, intraspinal, intrasternal, intravenous, etc. [EU]

Parenteral Nutrition: The administering of nutrients for assimilation and utilization by a patient who cannot maintain adequate nutrition by enteral feeding alone. Nutrients are administered by a route other than the alimentary canal (e.g., intravenously, subcutaneously). [NIH]

Pathologic: 1. Indicative of or caused by a morbid condition. 2. Pertaining to pathology (= branch of medicine that treats the essential nature of the disease, especially the structural and functional changes in tissues and organs of the body caused by the disease). [EU]

Pathologic Processes: The abnormal mechanisms and forms involved in the dysfunctions of tissues and organs. [NIH]

Patient Education: The teaching or training of patients concerning their own health needs. [NIH]

Peptide: Any compound consisting of two or more amino acids, the building blocks of proteins. Peptides are combined to make proteins. [NIH]

Perennial: Lasting through the year or for several years. [EU]

Perioral: Situated or occurring around the mouth. [EU]

Pesticide Residues: Pesticides or their breakdown products remaining in the environment following their normal use or accidental contamination. [NIH]

Pesticides: Chemicals used to destroy pests of any sort. The concept includes fungicides (industrial fungicides), insecticides, rodenticides, etc. [NIH]

Petroleum: Naturally occurring complex liquid hydrocarbons which, after distillation, yield combustible fuels, petrochemicals, and lubricants. [NIH]

Phagocyte: An immune system cell that can surround and kill microorganisms and remove dead cells. Phagocytes include macrophages. [NIH]

Phantom: Used to absorb and/or scatter radiation equivalently to a patient, and hence to estimate radiation doses and test imaging systems without actually exposing a patient. It may be an anthropomorphic or a physical test object. [NIH]

Pharmaceutical Aids: Substances which are of little or no therapeutic value, but are necessary in the manufacture, compounding, storage, etc., of pharmaceutical preparations or drug dosage forms. They include solvents, diluting agents, and suspending agents, and emulsifying agents. Also, antioxidants; preservatives, pharmaceutical; dyes (coloring agents); flavoring agents; vehicles; excipients; ointment bases. [NIH]

Pharmaceutical Preparations: Drugs intended for human or veterinary use, presented in their finished dosage form. Included here are materials used in the preparation and/or formulation of the finished dosage form. [NIH]

Pharmaceutical Solutions: Homogeneous liquid preparations that contain one or more chemical substances dissolved, i.e., molecularly dispersed, in a suitable solvent or mixture of mutually miscible solvents. For reasons of their ingredients, method of preparation, or use, they do not fall into another group of products. [NIH]

Pharmacokinetic: The mathematical analysis of the time courses of absorption, distribution, and elimination of drugs. [NIH]

Pharmacologic: Pertaining to pharmacology or to the properties and reactions of drugs. [EU]

Pharynx: The hollow tube about 5 inches long that starts behind the nose and ends at the top of the trachea (windpipe) and esophagus (the tube that goes to the stomach). [NIH]

Phenylalanine: An aromatic amino acid that is essential in the animal diet. It is a precursor of melanin, dopamine, noradrenalin, and thyroxine. [NIH]

Phospholipids: Lipids containing one or more phosphate groups, particularly those derived from either glycerol (phosphoglycerides; glycerophospholipids) or sphingosine (sphingolipids). They are polar lipids that are of great importance for the structure and function of cell membranes and are the most abundant of membrane lipids, although not stored in large amounts in the system. [NIH]

Phosphorus: A non-metallic element that is found in the blood, muscles, nevers, bones, and teeth, and is a component of adenosine triphosphate (ATP; the primary energy source for the body's cells.) [NIH]

Physicochemical: Pertaining to physics and chemistry. [EU]

Physiologic: Having to do with the functions of the body. When used in the phrase "physiologic age," it refers to an age assigned by general health, as opposed to calendar age. [NIH]

Plant Components: The anatomical components of a plant, including seeds. [NIH]

Plants: Multicellular, eukaryotic life forms of the kingdom Plantae. They are characterized by a mainly photosynthetic mode of nutrition; essentially unlimited growth at localized regions of cell divisions (meristems); cellulose within cells providing rigidity; the absence of organs of locomotion; absense of nervous and sensory systems; and an alteration of haploid and diploid generations. [NIH]

Plasmid: An autonomously replicating, extra-chromosomal DNA molecule found in many bacteria. Plasmids are widely used as carriers of cloned genes. [NIH]

Platinum: Platinum. A heavy, soft, whitish metal, resembling tin, atomic number 78, atomic weight 195.09, symbol Pt. (From Dorland, 28th ed) It is used in manufacturing equipment for laboratory and industrial use. It occurs as a black powder (platinum black) and as a spongy substance (spongy platinum) and may have been known in Pliny's time as "alutiae". [NIH]

Pneumonia: Inflammation of the lungs. [NIH]

Poisoning: A condition or physical state produced by the ingestion, injection or inhalation of, or exposure to a deleterious agent. [NIH]

Policy Making: The decision process by which individuals, groups or institutions establish policies pertaining to plans, programs or procedures. [NIH]

Polymers: Compounds formed by the joining of smaller, usually repeating, units linked by covalent bonds. These compounds often form large macromolecules (e.g., polypeptides, proteins, plastics). [NIH]

Polysaccharide: A type of carbohydrate. It contains sugar molecules that are linked together chemically. [NIH]

Postmenopausal: Refers to the time after menopause. Menopause is the time in a woman's life when menstrual periods stop permanently; also called "change of life." [NIH]

Postnatal: Occurring after birth, with reference to the newborn. [EU]

Potassium: An element that is in the alkali group of metals. It has an atomic symbol K, atomic number 19, and atomic weight 39.10. It is the chief cation in the intracellular fluid of muscle and other cells. Potassium ion is a strong electrolyte and it plays a significant role in the regulation of fluid volume and maintenance of the water-electrolyte balance. [NIH]

Potassium Chloride: Potassium chloride. A white crystal or crystalline powder used as an electrolyte replenisher, in the treatment of hypokalemia, in buffer solutions, and in fertilizers and explosives. [NIH]

Practice Guidelines: Directions or principles presenting current or future rules of policy for the health care practitioner to assist him in patient care decisions regarding diagnosis, therapy, or related clinical circumstances. The guidelines may be developed by government agencies at any level, institutions, professional societies, governing boards, or by the convening of expert panels. The guidelines form a basis for the evaluation of all aspects of health care and delivery. [NIH]

Precursor: Something that precedes. In biological processes, a substance from which

another, usually more active or mature substance is formed. In clinical medicine, a sign or symptom that heralds another. [EU]

Prenatal: Existing or occurring before birth, with reference to the fetus. [EU]

Prevalence: The total number of cases of a given disease in a specified population at a designated time. It is differentiated from incidence, which refers to the number of new cases in the population at a given time. [NIH]

Progesterone: Pregn-4-ene-3,20-dione. The principal progestational hormone of the body, secreted by the corpus luteum, adrenal cortex, and placenta. Its chief function is to prepare the uterus for the reception and development of the fertilized ovum. It acts as an antiovarian agent when administered on days 5-25 of the menstrual cycle. [NIH]

Progression: Increase in the size of a tumor or spread of cancer in the body. [NIH]

Progressive: Advancing; going forward; going from bad to worse; increasing in scope or severity. [EU]

Promoter: A chemical substance that increases the activity of a carcinogenic process. [NIH]

Prophylaxis: An attempt to prevent disease. [NIH]

Propylene Glycol: A clear, colorless, viscous organic solvent and diluent used in pharmaceutical preparations. [NIH]

Prostaglandin: Any of a group of components derived from unsaturated 20-carbon fatty acids, primarily arachidonic acid, via the cyclooxygenase pathway that are extremely potent mediators of a diverse group of physiologic processes. The abbreviation for prostaglandin is PG; specific compounds are designated by adding one of the letters A through I to indicate the type of substituents found on the hydrocarbon skeleton and a subscript (1, 2 or 3) to indicate the number of double bonds in the hydrocarbon skeleton e.g., PGE₂. The predominant naturally occurring prostaglandins all have two double bonds and are synthesized from arachidonic acid (5,8,11,14-eicosatetraenoic acid) by the pathway shown in the illustration. The 1 series and 3 series are produced by the same pathway with fatty acids having one fewer double bond (8,11,14-eicosatrienoic acid or one more double bond (5,8,11,14,17-eicosapentaenoic acid) than arachidonic acid. The subscript α or β indicates the configuration at C-9 (α denotes a substituent below the plane of the ring, β , above the plane). The naturally occurring PGF's have the α configuration, e.g., PGF₂ α . All of the prostaglandins act by binding to specific cell-surface receptors causing an increase in the level of the intracellular second messenger cyclic AMP (and in some cases cyclic GMP also). The effect produced by the cyclic AMP increase depends on the specific cell type. In some cases there is also a positive feedback effect. Increased cyclic AMP increases prostaglandin synthesis leading to further increases in cyclic AMP. [EU]

Prostaglandins A: (13E,15S)-15-Hydroxy-9-oxoprostano-10,13-dien-1-oic acid (PGA(1)); (5Z,13E,15S)-15-hydroxy-9-oxoprostano-5,10,13-trien-1-oic acid (PGA(2)); (5Z,13E,15S,17Z)-15-hydroxy-9-oxoprostano-5,10,13,17-tetraen-1-oic acid (PGA(3)). A group of naturally occurring secondary prostaglandins derived from PGE. PGA(1) and PGA(2) as well as their 19-hydroxy derivatives are found in many organs and tissues. [NIH]

Protein C: A vitamin-K dependent zymogen present in the blood, which, upon activation by thrombin and thrombomodulin exerts anticoagulant properties by inactivating factors Va and VIIIa at the rate-limiting steps of thrombin formation. [NIH]

Protein S: The vitamin K-dependent cofactor of activated protein C. Together with protein C, it inhibits the action of factors VIIIa and Va. A deficiency in protein S can lead to recurrent venous and arterial thrombosis. [NIH]

Proteins: Polymers of amino acids linked by peptide bonds. The specific sequence of amino

acids determines the shape and function of the protein. [NIH]

Proteus: A genus of gram-negative, facultatively anaerobic, rod-shaped bacteria that occurs in the intestines of humans and a wide variety of animals, as well as in manure, soil, and polluted waters. Its species are pathogenic, causing urinary tract infections and are also considered secondary invaders, causing septic lesions at other sites of the body. [NIH]

Protons: Stable elementary particles having the smallest known positive charge, found in the nuclei of all elements. The proton mass is less than that of a neutron. A proton is the nucleus of the light hydrogen atom, i.e., the hydrogen ion. [NIH]

Protozoa: A subkingdom consisting of unicellular organisms that are the simplest in the animal kingdom. Most are free living. They range in size from submicroscopic to macroscopic. Protozoa are divided into seven phyla: Sarcomastigophora, Labyrinthomorpha, Apicomplexa, Microspora, Asctospora, Myxozoa, and Ciliophora. [NIH]

Protozoal: Having to do with the simplest organisms in the animal kingdom. Protozoa are single-cell organisms, such as ameba, and are different from bacteria, which are not members of the animal kingdom. Some protozoa can be seen without a microscope. [NIH]

Psychiatric: Pertaining to or within the purview of psychiatry. [EU]

Public Policy: A course or method of action selected, usually by a government, from among alternatives to guide and determine present and future decisions. [NIH]

Pulmonary: Relating to the lungs. [NIH]

Purines: A series of heterocyclic compounds that are variously substituted in nature and are known also as purine bases. They include adenine and guanine, constituents of nucleic acids, as well as many alkaloids such as caffeine and theophylline. Uric acid is the metabolic end product of purine metabolism. [NIH]

Pyrimidines: A family of 6-membered heterocyclic compounds occurring in nature in a wide variety of forms. They include several nucleic acid constituents (cytosine, thymine, and uracil) and form the basic structure of the barbiturates. [NIH]

Race: A population within a species which exhibits general similarities within itself, but is both discontinuous and distinct from other populations of that species, though not sufficiently so as to achieve the status of a taxon. [NIH]

Radiation: Emission or propagation of electromagnetic energy (waves/rays), or the waves/rays themselves; a stream of electromagnetic particles (electrons, neutrons, protons, alpha particles) or a mixture of these. The most common source is the sun. [NIH]

Radiation therapy: The use of high-energy radiation from x-rays, gamma rays, neutrons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body in the area near cancer cells (internal radiation therapy, implant radiation, or brachytherapy). Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. Also called radiotherapy. [NIH]

Radioactive: Giving off radiation. [NIH]

Radiolabeled: Any compound that has been joined with a radioactive substance. [NIH]

Radiotherapy: The use of ionizing radiation to treat malignant neoplasms and other benign conditions. The most common forms of ionizing radiation used as therapy are x-rays, gamma rays, and electrons. A special form of radiotherapy, targeted radiotherapy, links a cytotoxic radionuclide to a molecule that targets the tumor. When this molecule is an antibody or other immunologic molecule, the technique is called radioimmunotherapy. [NIH]

Reagent: A substance employed to produce a chemical reaction so as to detect, measure, produce, etc., other substances. [EU]

Receptor: A molecule inside or on the surface of a cell that binds to a specific substance and causes a specific physiologic effect in the cell. [NIH]

Recombinant: A cell or an individual with a new combination of genes not found together in either parent; usually applied to linked genes. [EU]

Rectum: The last 8 to 10 inches of the large intestine. [NIH]

Refer: To send or direct for treatment, aid, information, de decision. [NIH]

Respiration: The act of breathing with the lungs, consisting of inspiration, or the taking into the lungs of the ambient air, and of expiration, or the expelling of the modified air which contains more carbon dioxide than the air taken in (Blakiston's Gould Medical Dictionary, 4th ed.). This does not include tissue respiration (= oxygen consumption) or cell respiration (= cell respiration). [NIH]

Retinoids: Derivatives of vitamin A. Used clinically in the treatment of severe cystic acne, psoriasis, and other disorders of keratinization. Their possible use in the prophylaxis and treatment of cancer is being actively explored. [NIH]

Rheumatism: A group of disorders marked by inflammation or pain in the connective tissue structures of the body. These structures include bone, cartilage, and fat. [NIH]

Rheumatoid: Resembling rheumatism. [EU]

Rheumatoid arthritis: A form of arthritis, the cause of which is unknown, although infection, hypersensitivity, hormone imbalance and psychologic stress have been suggested as possible causes. [NIH]

Rhinitis: Inflammation of the mucous membrane of the nose. [NIH]

Rigidity: Stiffness or inflexibility, chiefly that which is abnormal or morbid; rigor. [EU]

Risk factor: A habit, trait, condition, or genetic alteration that increases a person's chance of developing a disease. [NIH]

Rod: A reception for vision, located in the retina. [NIH]

Rodenticides: Substances used to destroy or inhibit the action of rats, mice, or other rodents. [NIH]

Rye: A hardy grain crop, *Secale cereale*, grown in northern climates. It is the most frequent host to ergot (*claviceps*), the toxic fungus. Its hybrid with wheat is triticale, another grain. [NIH]

Saccharin: Flavoring agent and non-nutritive sweetener. [NIH]

Salicylate: Non-steroidal anti-inflammatory drugs. [NIH]

Salicylic: A tuberculosis drug. [NIH]

Salicylic Acids: Derivatives and salts of salicylic acid. [NIH]

Saliva: The clear, viscous fluid secreted by the salivary glands and mucous glands of the mouth. It contains mucins, water, organic salts, and ptylin. [NIH]

Salivary: The duct that convey saliva to the mouth. [NIH]

Salivary glands: Glands in the mouth that produce saliva. [NIH]

Saponins: Sapogenin glycosides. A type of glycoside widely distributed in plants. Each consists of a sapogenin as the aglycon moiety, and a sugar. The sapogenin may be a steroid or a triterpene and the sugar may be glucose, galactose, a pentose, or a methylpentose. Sapogenins are poisonous towards the lower forms of life and are powerful hemolytics when injected into the blood stream able to dissolve red blood cells at even extreme

dilutions. [NIH]

Scatter: The extent to which relative success and failure are divergently manifested in qualitatively different tests. [NIH]

Screening: Checking for disease when there are no symptoms. [NIH]

Secretion: 1. The process of elaborating a specific product as a result of the activity of a gland; this activity may range from separating a specific substance of the blood to the elaboration of a new chemical substance. 2. Any substance produced by secretion. [EU]

Senile: Relating or belonging to old age; characteristic of old age; resulting from infirmity of old age. [NIH]

Sensor: A device designed to respond to physical stimuli such as temperature, light, magnetism or movement and transmit resulting impulses for interpretation, recording, movement, or operating control. [NIH]

Septic: Produced by or due to decomposition by microorganisms; putrefactive. [EU]

Serum: The clear liquid part of the blood that remains after blood cells and clotting proteins have been removed. [NIH]

Sex Characteristics: Those characteristics that distinguish one sex from the other. The primary sex characteristics are the ovaries and testes and their related hormones. Secondary sex characteristics are those which are masculine or feminine but not directly related to reproduction. [NIH]

Shedding: Release of infectious particles (e. g., bacteria, viruses) into the environment, for example by sneezing, by fecal excretion, or from an open lesion. [NIH]

Shock: The general bodily disturbance following a severe injury; an emotional or moral upset occasioned by some disturbing or unexpected experience; disruption of the circulation, which can upset all body functions: sometimes referred to as circulatory shock. [NIH]

Side effect: A consequence other than the one(s) for which an agent or measure is used, as the adverse effects produced by a drug, especially on a tissue or organ system other than the one sought to be benefited by its administration. [EU]

Sister Chromatid Exchange: An exchange of segments between the sister chromatids of a chromosome, either between the sister chromatids of a meiotic tetrad or between the sister chromatids of a duplicated somatic chromosome. Its frequency is increased by ultraviolet and ionizing radiation and other mutagenic agents and is particularly high in Bloom syndrome. [NIH]

Skeleton: The framework that supports the soft tissues of vertebrate animals and protects many of their internal organs. The skeletons of vertebrates are made of bone and/or cartilage. [NIH]

Skin test: A test for an immune response to a compound by placing it on or under the skin. [NIH]

Small intestine: The part of the digestive tract that is located between the stomach and the large intestine. [NIH]

Smooth muscle: Muscle that performs automatic tasks, such as constricting blood vessels. [NIH]

Sodium: An element that is a member of the alkali group of metals. It has the atomic symbol Na, atomic number 11, and atomic weight 23. With a valence of 1, it has a strong affinity for oxygen and other nonmetallic elements. Sodium provides the chief cation of the extracellular body fluids. Its salts are the most widely used in medicine. (From Dorland, 27th ed) Physiologically the sodium ion plays a major role in blood pressure regulation, maintenance

of fluid volume, and electrolyte balance. [NIH]

Sodium Nitrite: Nitrous acid sodium salt. Used in many industrial processes, in meat curing, coloring, and preserving, and as a reagent in analytical chemistry. It is used therapeutically as an antidote in cyanide poisoning. The compound is toxic and mutagenic and will react in vivo with secondary or tertiary amines thereby producing highly carcinogenic nitrosamines. [NIH]

Soft tissue: Refers to muscle, fat, fibrous tissue, blood vessels, or other supporting tissue of the body. [NIH]

Solvent: 1. Dissolving; effecting a solution. 2. A liquid that dissolves or that is capable of dissolving; the component of a solution that is present in greater amount. [EU]

Somatic: 1. Pertaining to or characteristic of the soma or body. 2. Pertaining to the body wall in contrast to the viscera. [EU]

Specialist: In medicine, one who concentrates on 1 special branch of medical science. [NIH]

Species: A taxonomic category subordinate to a genus (or subgenus) and superior to a subspecies or variety, composed of individuals possessing common characters distinguishing them from other categories of individuals of the same taxonomic level. In taxonomic nomenclature, species are designated by the genus name followed by a Latin or Latinized adjective or noun. [EU]

Spices: The dried seeds, bark, root, stems, buds, leaves, or fruit of aromatic plants used to season food. [NIH]

Spinal cord: The main trunk or bundle of nerves running down the spine through holes in the spinal bone (the vertebrae) from the brain to the level of the lower back. [NIH]

Spirochete: Lyme disease. [NIH]

Spleen: An organ that is part of the lymphatic system. The spleen produces lymphocytes, filters the blood, stores blood cells, and destroys old blood cells. It is located on the left side of the abdomen near the stomach. [NIH]

Sprue: A non febrile tropical disease of uncertain origin. [NIH]

Steroid: A group name for lipids that contain a hydrogenated cyclopentanoperhydrophenanthrene ring system. Some of the substances included in this group are progesterone, adrenocortical hormones, the gonadal hormones, cardiac aglycones, bile acids, sterols (such as cholesterol), toad poisons, saponins, and some of the carcinogenic hydrocarbons. [EU]

Stimulant: 1. Producing stimulation; especially producing stimulation by causing tension on muscle fibre through the nervous tissue. 2. An agent or remedy that produces stimulation. [EU]

Stomach: An organ of digestion situated in the left upper quadrant of the abdomen between the termination of the esophagus and the beginning of the duodenum. [NIH]

Stool: The waste matter discharged in a bowel movement; feces. [NIH]

Strand: DNA normally exists in the bacterial nucleus in a helix, in which two strands are coiled together. [NIH]

Stress: Forcibly exerted influence; pressure. Any condition or situation that causes strain or tension. Stress may be either physical or psychological, or both. [NIH]

Stroke: Sudden loss of function of part of the brain because of loss of blood flow. Stroke may be caused by a clot (thrombosis) or rupture (hemorrhage) of a blood vessel to the brain. [NIH]

Subacute: Somewhat acute; between acute and chronic. [EU]

Subclinical: Without clinical manifestations; said of the early stage(s) of an infection or other disease or abnormality before symptoms and signs become apparent or detectable by clinical examination or laboratory tests, or of a very mild form of an infection or other disease or abnormality. [EU]

Subcutaneous: Beneath the skin. [NIH]

Subspecies: A category intermediate in rank between species and variety, based on a smaller number of correlated characters than are used to differentiate species and generally conditioned by geographical and/or ecological occurrence. [NIH]

Substance P: An eleven-amino acid neurotransmitter that appears in both the central and peripheral nervous systems. It is involved in transmission of pain, causes rapid contractions of the gastrointestinal smooth muscle, and modulates inflammatory and immune responses. [NIH]

Substrate: A substance upon which an enzyme acts. [EU]

Sulfites: Inorganic salts of sulfurous acid. [NIH]

Sulfur: An element that is a member of the chalcogen family. It has an atomic symbol S, atomic number 16, and atomic weight 32.066. It is found in the amino acids cysteine and methionine. [NIH]

Sulfur Dioxide: A highly toxic, colorless, nonflammable gas. It is used as a pharmaceutical aid and antioxidant. It is also an environmental air pollutant. [NIH]

Sympathomimetic: 1. Mimicking the effects of impulses conveyed by adrenergic postganglionic fibres of the sympathetic nervous system. 2. An agent that produces effects similar to those of impulses conveyed by adrenergic postganglionic fibres of the sympathetic nervous system. Called also adrenergic. [EU]

Synergistic: Acting together; enhancing the effect of another force or agent. [EU]

Syphilis: A contagious venereal disease caused by the spirochete *Treponema pallidum*. [NIH]

Systemic: Affecting the entire body. [NIH]

Systolic: Indicating the maximum arterial pressure during contraction of the left ventricle of the heart. [EU]

Taste Buds: Small sensory organs which contain gustatory receptor cells, basal cells, and supporting cells. Taste buds in humans are found in the epithelia of the tongue, palate, and pharynx. They are innervated by the chorda tympani nerve (a branch of the facial nerve) and the glossopharyngeal nerve. [NIH]

Teratogens: An agent that causes the production of physical defects in the developing embryo. [NIH]

Therapeutics: The branch of medicine which is concerned with the treatment of diseases, palliative or curative. [NIH]

Threshold: For a specified sensory modality (e. g. light, sound, vibration), the lowest level (absolute threshold) or smallest difference (difference threshold, difference limen) or intensity of the stimulus discernible in prescribed conditions of stimulation. [NIH]

Thrombin: An enzyme formed from prothrombin that converts fibrinogen to fibrin. (Dorland, 27th ed) EC 3.4.21.5. [NIH]

Thrombomodulin: A cell surface glycoprotein of endothelial cells that binds thrombin and serves as a cofactor in the activation of protein C and its regulation of blood coagulation. [NIH]

Thyroid: A gland located near the windpipe (trachea) that produces thyroid hormone,

which helps regulate growth and metabolism. [NIH]

Thyroid Gland: A highly vascular endocrine gland consisting of two lobes, one on either side of the trachea, joined by a narrow isthmus; it produces the thyroid hormones which are concerned in regulating the metabolic rate of the body. [NIH]

Thyroid Hormones: Hormones secreted by the thyroid gland. [NIH]

Thyroxine: An amino acid of the thyroid gland which exerts a stimulating effect on thyroid metabolism. [NIH]

Tissue: A group or layer of cells that are alike in type and work together to perform a specific function. [NIH]

Topical: On the surface of the body. [NIH]

Toxic: Having to do with poison or something harmful to the body. Toxic substances usually cause unwanted side effects. [NIH]

Toxicity: The quality of being poisonous, especially the degree of virulence of a toxic microbe or of a poison. [EU]

Toxicokinetics: Study of the absorption, distribution, metabolism, and excretion of test substances. [NIH]

Toxicology: The science concerned with the detection, chemical composition, and pharmacologic action of toxic substances or poisons and the treatment and prevention of toxic manifestations. [NIH]

Toxins: Specific, characterizable, poisonous chemicals, often proteins, with specific biological properties, including immunogenicity, produced by microbes, higher plants, or animals. [NIH]

Toxoplasmosis: The acquired form of infection by *Toxoplasma gondii* in animals and man. [NIH]

Trace element: Substance or element essential to plant or animal life, but present in extremely small amounts. [NIH]

Trachea: The cartilaginous and membranous tube descending from the larynx and branching into the right and left main bronchi. [NIH]

Tragacanth: Powdered exudate from *Astragalus gummifer* and related plants. It forms gelatinous mass in water. Tragacanth is used as suspending agent, excipient or emulsifier in foods, cosmetics and pharmaceuticals. It has also been used as a bulk-forming laxative. [NIH]

Transfection: The uptake of naked or purified DNA into cells, usually eukaryotic. It is analogous to bacterial transformation. [NIH]

Translation: The process whereby the genetic information present in the linear sequence of ribonucleotides in mRNA is converted into a corresponding sequence of amino acids in a protein. It occurs on the ribosome and is unidirectional. [NIH]

Transmitter: A chemical substance which effects the passage of nerve impulses from one cell to the other at the synapse. [NIH]

Trauma: Any injury, wound, or shock, must frequently physical or structural shock, producing a disturbance. [NIH]

Trees: Woody, usually tall, perennial higher plants (Angiosperms, Gymnosperms, and some Pterophyta) having usually a main stem and numerous branches. [NIH]

Tunica: A rather vague term to denote the lining coat of hollow organs, tubes, or cavities. [NIH]

Tyramine: An indirect sympathomimetic. Tyramine does not directly activate adrenergic

receptors, but it can serve as a substrate for adrenergic uptake systems and monoamine oxidase so it prolongs the actions of adrenergic transmitters. It also provokes transmitter release from adrenergic terminals. Tyramine may be a neurotransmitter in some invertebrate nervous systems. [NIH]

Tyrosine: A non-essential amino acid. In animals it is synthesized from phenylalanine. It is also the precursor of epinephrine, thyroid hormones, and melanin. [NIH]

Unconscious: Experience which was once conscious, but was subsequently rejected, as the "personal unconscious". [NIH]

Urinary: Having to do with urine or the organs of the body that produce and get rid of urine. [NIH]

Urinary tract: The organs of the body that produce and discharge urine. These include the kidneys, ureters, bladder, and urethra. [NIH]

Urinary tract infection: An illness caused by harmful bacteria growing in the urinary tract. [NIH]

Urogenital: Pertaining to the urinary and genital apparatus; genitourinary. [EU]

Urticaria: A vascular reaction of the skin characterized by erythema and wheal formation due to localized increase of vascular permeability. The causative mechanism may be allergy, infection, or stress. [NIH]

Vaccine: A substance or group of substances meant to cause the immune system to respond to a tumor or to microorganisms, such as bacteria or viruses. [NIH]

Vagina: The muscular canal extending from the uterus to the exterior of the body. Also called the birth canal. [NIH]

Vaginal: Of or having to do with the vagina, the birth canal. [NIH]

Vascular: Pertaining to blood vessels or indicative of a copious blood supply. [EU]

Vasculitis: Inflammation of a blood vessel. [NIH]

Vasodilator: An agent that widens blood vessels. [NIH]

Vector: Plasmid or other self-replicating DNA molecule that transfers DNA between cells in nature or in recombinant DNA technology. [NIH]

Vein: Vessel-carrying blood from various parts of the body to the heart. [NIH]

Venereal: Pertaining or related to or transmitted by sexual contact. [EU]

Venoms: Poisonous animal secretions forming fluid mixtures of many different enzymes, toxins, and other substances. These substances are produced in specialized glands and secreted through specialized delivery systems (nematocysts, spines, fangs, etc.) for disabling prey or predator. [NIH]

Vesicular: 1. Composed of or relating to small, saclike bodies. 2. Pertaining to or made up of vesicles on the skin. [EU]

Veterinary Medicine: The medical science concerned with the prevention, diagnosis, and treatment of diseases in animals. [NIH]

Viral: Pertaining to, caused by, or of the nature of virus. [EU]

Virulence: The degree of pathogenicity within a group or species of microorganisms or viruses as indicated by case fatality rates and/or the ability of the organism to invade the tissues of the host. [NIH]

Virus: Submicroscopic organism that causes infectious disease. In cancer therapy, some viruses may be made into vaccines that help the body build an immune response to, and kill, tumor cells. [NIH]

Viscosity: A physical property of fluids that determines the internal resistance to shear forces. [EU]

Vitamin A: A substance used in cancer prevention; it belongs to the family of drugs called retinoids. [NIH]

Vitro: Descriptive of an event or enzyme reaction under experimental investigation occurring outside a living organism. Parts of an organism or microorganism are used together with artificial substrates and/or conditions. [NIH]

Vivo: Outside of or removed from the body of a living organism. [NIH]

Weight Gain: Increase in body weight over existing weight. [NIH]

Windpipe: A rigid tube, 10 cm long, extending from the cricoid cartilage to the upper border of the fifth thoracic vertebra. [NIH]

Xenograft: The cells of one species transplanted to another species. [NIH]

X-ray: High-energy radiation used in low doses to diagnose diseases and in high doses to treat cancer. [NIH]

X-ray therapy: The use of high-energy radiation from x-rays to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy) or from materials called radioisotopes. Radioisotopes produce radiation and can be placed in or near the tumor or in the area near cancer cells. This type of radiation treatment is called internal radiation therapy, implant radiation, interstitial radiation, or brachytherapy. Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. X-ray therapy is also called radiation therapy, radiotherapy, and irradiation. [NIH]

Yeasts: A general term for single-celled rounded fungi that reproduce by budding. Brewers' and bakers' yeasts are *Saccharomyces cerevisiae*; therapeutic dried yeast is dried yeast. [NIH]

Zymogen: Inactive form of an enzyme which can then be converted to the active form, usually by excision of a polypeptide, e. g. trypsinogen is the zymogen of trypsin. [NIH]

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