

FOREWORD

Work on the *Dictionary of Food Science and Technology* started at IFIS Publishing back in the summer of 2000. The original idea was to create the *Dictionary* from the companion *Thesaurus* to the bibliographic database *FSTA – Food Science and Technology Abstracts®* which is also produced by IFIS. Since the *Thesaurus* is compiled on the basis of frequency of current use of terms in *FSTA*, it was felt that it would be an excellent starting point for identifying terms which should also be in a dictionary of food science and technology. All the terms in the *Thesaurus* were reviewed as candidate terms for the *Dictionary* and over the last four years the *Thesaurus* and *Dictionary* have been updated concomitantly.

All the terms in this first edition of the *Dictionary* have been defined by specialist scientific staff at IFIS with the aim of satisfying the needs of academia and the food industry worldwide. It is also hoped that the *Dictionary* will be of value to people working in a number of related fields who may need to learn the meaning of specific terms in food science and technology.

It is probably inevitable that some deserving terms will be missing from the *Dictionary*. We intend to continue to identify candidate terms and would also be pleased to hear from users of the *Dictionary* who may wish to suggest entries for future editions.

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PREFACE AND GUIDE TO DICTIONARY USAGE

The *Dictionary of Food Science and Technology* has been largely compiled from terms contained in the most recent edition (2004) of the companion *Thesaurus* (ISBN 0 86014 188 8) to the bibliographic database *FSTA – Food Science and Technology Abstracts*®. It, therefore, contains a large number of definitions of terms which are specific to food science and technology (covering sensory analysis, consumer research, food composition, nutrition [food related not clinical aspects], catering, and food safety) and is augmented with definitions of terms from cognate disciplines (including chemistry, biochemistry, physics, microbiology, public health, economics, engineering and packaging). The *Dictionary* also contains a large number of definitions covering food commodities of every description including processed and prepared foods of all types together with: alcoholic and non-alcoholic beverages; fruits; vegetables; nuts; cocoa, chocolate and sugar confectionery products; sugars; syrups; starches; cereals and bakery products; fats; oils; margarine; milk and dairy products (including cream, butter, cheese, cultured milk products etc); eggs and egg products; fish and marine products; meat; poultry; game; additives; spices; and condiments. Whenever appropriate, local names, synonyms and Latin names also appear.

Probably the biggest impact on food science and technology in the last ten years or so has been made by the application of biotechnology in its most modern incarnation; this is reflected in the *Dictionary* by the inclusion of definitions of a large number of related terms such as Gene cloning, Genetic engineering, Gene transfer, Immobilization, Protein engineering, PCR (polymerase chain reaction), and Bioremediation. There are 7852 defined terms in this edition of the *Dictionary*.

Alphabetical order in the *Dictionary* is determined on a letter by letter basis (not word by word) as follows:

Acetates
Acetic acid
Acetic acid bacteria
Acetic fermentation
Acetobacter.

Characters such as numbers, hyphens, primes, subscripts and superscripts are ignored when ordering terms; neither are small capitals, hyphenated modifiers and alphabetic Greek characters used to determine primary alphabetic order. For example, *N*-Acetylglucosamine, *D*-Amino acids, and 2-Aminobutane all appear under the letter A. Similarly, α -Carotene and β -Carotene both appear under the letter C. The Greek alphabet is given at Appendix A.

Preface and Guide to Dictionary Usage

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Terms in the *Dictionary* are shown in bold type face. Cross references within definitions to other terms appearing in the *Dictionary* are also shown in bold. For example,

Ale Historically, a **beer** type made without **hops**; in modern usage, a range of British-style beers, commonly brewed with top-fermenting **brewers yeasts**.

Thus, the entry for ale given above shows that the *Dictionary* also contains definitions for the terms beer, hops and brewers yeasts. Similarly, the entry for bacteriocins which follows:

Bacteriocins Peptides produced by specific bacteria that possess **antibacterial activity**. Both purified bacteriocins and bacteriocin-producing bacteria are used in the food industry, applications including inhibition of the growth of **pathogens** and **spoilage** organisms.

indicates that the *Dictionary* also has definitions for the terms peptides, antibacterial activity, pathogens and spoilage.

The definitions in the *Dictionary* have been compiled and edited by specialist scientific staff at IFIS Publishing who also produce *FSTA* and the companion *Thesaurus*. IFIS is an acronym for the International Food Information Service which was founded in 1968. IFIS Publishing is a not for profit organisation (Charity No. 1068176) and a company limited by guarantee (Company No. 3507902).

The *Dictionary* has been compiled to appeal to a wide range of users – not just students of food science and technology and their teachers or researchers in this field or food processors. It is hoped that the *Dictionary* will also become a valuable tool for people working in related fields or anyone who has a general interest in the issues facing the international food sector. The *Dictionary* has been designed to be comprehensive, clear and easy to use. Some deserving terms may be missing and future editions are planned to make good any omissions. We would be pleased to hear from users who may wish to comment on this edition or suggest candidate terms for future editions. Correspondence concerning the *Dictionary* should be addressed to the Head of Publishing, IFIS Publishing, Lane End House, Shinfield Road, Shinfield, Reading RG2 9BB, UK; e-mail: ifis@ifis.org.

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AAS Abbreviation for **atomic absorption spectroscopy**.

Abalones Marine gastropod **molluscs** belonging to the family Haliotidae, which contains around 70 species; widely distributed, but found mainly in the Western Pacific (Japan and Australia), and also off California and Southern Africa. Only the adductor muscle is edible, having a mild sweet **flavour**; this muscle is normally tenderized to soften the naturally tough, rubbery texture. Marketed in a variety of forms, including powdered, brined and canned products.

Abate Alternative term for the pesticide **temephos**.

Abattoirs Types of **slaughterhouses** where animals are slaughtered for **meat** and **offal**. Abattoirs usually include lairage (a holding area for live animals), a slaughtering line and cold stores. Facilities for processing of by-products (blood, intestines, skins, fat, bristle, unusable waste products), and treatment of waste water and air are often included.

Abondance cheese French semi-hard mountain **cheese** made from **milk** of cows of the breeds Abondance, Montbeliard and Tarine. Characterized by a strong **aroma** and a complex **flavour**. The crust and a grey layer beneath are removed before consumption.

Abreh Alternative term for **abrey**.

Abrey Sudanese non-alcoholic **fermented beverages** made from **sorghum**.

Abscisic acid Plant growth regulator, important in ripening of **fruits** and **cereals**.

Absidia Genus of **fungi** of the class Zygomycetes. Occur as saprotrophs on decaying vegetable matter, grains, soil or dung, and meat, or as **parasites** or **pathogens** of plants or animals. Some species may be used in the production of **chitosan** (e.g. *Absidia coerulea*, *A. glauca* and *A. atrospora*).

Absinthe Liqueur flavoured with **aniseed** and **wormwood**. Widely believed to be neurotoxic as a result of **thujone** derived from wormwood; sale is prohibited in many countries for this reason.

Absorbents Materials or substances that are capable of **absorption**. Uses of absorbents include incorporation within food **packaging** (to absorb oxygen as a preservation technique, to control humidity, and to

manage aroma and flavour problems in packaged foods) and for **purification** of foods and beverages, such as drinking water and liquid foods.

Absorption Process involving molecules of one substance being taken directly into another substance. Absorption may be either a physical or a chemical process, physical absorption involving such factors as solubility and vapour-pressure relationships and chemical absorption involving chemical reactions between the absorbed substance and the absorbing medium. Absorption includes such processes as the passage of **nutrients** and other substances from the **gastrointestinal tract** into the blood and lymph, and also the uptake of **water**, **fats** and other substances into foods.

Acaricides **Pesticides** used to control **mites** and ticks (family Acaridae), many of which are responsible for animal diseases and spoilage of stored crops. Commonly used examples are **amitraz**, bromopropylate, **coumaphos** and **fluvalinate**. Residues in foods may represent a health hazard to consumers.

ACC Abbreviation for the plant growth regulator, **1-aminocyclopropane-1-carboxylic acid**.

Acceptability The degree to which the quality of a food is regarded as satisfactory.

Acceptable daily intake A safety level for substances used as **food additives**. The acceptable daily intake (ADI) is usually calculated as 1/100th of the maximum dose of the substance that causes no adverse effects in humans.

Acceptance The willingness to regard the quality of a food as satisfactory.

Acephate Systemic insecticide used to control a wide range of chewing and sucking **insects** (e.g. **aphids**, sawflies and leafhoppers) in fruits and vegetables. Classified by WHO as slightly toxic (WHO III).

Acerola Alternative term for **Barbados cherries**.

Acesulfame K Non-nutritive artificial sweetener (trade name Sunett), approximately 200 times as sweet as **sucrose**. Potassium salt derived from acetoacetic acid, with good heat stability and a synergistic effect in sweetener blends. Used in a variety of food applications, including **yoghurt**, table-top **sweeteners**, **soft drinks**, **candy** and other **confectionery**.

Acetaldehyde Aldehyde, synonym ethanal. One of the common **flavour compounds** in many foods and **beverages**. May cause **taints** in some foods. Toxic at excessive concentrations.

Acetals Group of diethers which occur as natural **flavour compounds** in foods such as **fruits** and **herbs**, and **alcoholic beverages**. May be used in **flavourings**.

Acetan Anionic, **xanthan**-like **exopolysaccharides** formed by *Acetobacter xylinum*. Of potential use in **thickeners** or **gelling agents**.

Acetates Salts or esters of **acetic acid**. **Flavour compounds** in many foods and **beverages**. May be used as **preservatives**.

Acetic acid Member of the short chain **fatty acids** group, which occurs in a range of foods and **beverages**. May be one of the **flavour compounds**, or cause **taints**, depending on food or beverage type and the concentration at which it is present. Acetic acid is the main constituent of **vinegar**. It may be used for **preservation** or flavouring of foods.

Acetic acid bacteria Any Gram negative, aerobic, rod-shaped **bacteria**, e.g. *Acetobacter* species and *Gluconobacter* species, capable of oxidizing **ethanol** to **acetic acid**. Occur on the surface of fruits, vegetables and flowers, and in soil. Used industrially in the manufacture of **vinegar**. May cause **spoilage** of **beer** and **wines**.

Acetic fermentation The process by which certain **microorganisms** (e.g. *Acetobacter* and *Acetomonas* spp., and *Gluconobacter oxydans*) metabolize an alcoholic substrate to form **acetic acid**, the main constituent of **vinegar**. Alcoholic substrates can be obtained from a variety of sources, such as **fruits**, **vegetables** and **grain**.

Acetobacter Genus of Gram negative, strictly anaerobic, rod-shaped **acetic acid bacteria** of the family Acetobacteraceae, that are capable of oxidizing **ethanol** to **acetic acid**. Occur on **fruits** and flowers. May be responsible for **spoilage** of **beer** and **wines**. *Acetobacter aceti*, *A. aceti* subsp. *xylinum*, *A. acetigenum* and *A. schuezenbachii* are used in commercial production of **vinegar**.

Acetoin Flavour compound found commonly in **dairy products** and **wines**. Synonyms include **3-hydroxy-2-butanone** and **acetylmethylcarbinol**.

α -Acetolactate Precursor of the flavour compound **diacetyl**.

Acetolactate decarboxylases EC 4.1.1.5. These enzymes can be used to reduce the maturation time in **winemaking** by converting acetolactate to **acetoin**, and to analyse **diacetyl** and acetoin concentrations in **beer** during **brewing**. Expression of these enzymes in

brewers yeasts has also been used to reduce the levels of diacetyl, thus reducing the time required for lagering.

Acetomonas Former name for the genus *Gluconobacter*.

Acetone Smallest of the **ketones**, synonym **propanone**. Widely used as a solvent in food analyses, particularly for lipids and related compounds. Produced along with **butanol** and **ethanol** as a microbial **fermentation** product from unconventional feedstocks including food processing wastes.

Acetophenone Aromatic ketone that is among the **flavour compounds** in foods such as **herbs**, **honey**s and **katsuobushi**.

Acetylacetone Ketone, synonym pentanedione, which occurs in the **flavour compounds** of foods and **beverages**, including **beer**, **coffee** and **fermented dairy products**.

Acetylation Introduction of acetyl groups into a compound or substance. Usually achieved by reaction with acetic anhydride, **acetic acid** or an acetate such as vinyl acetate. Sometimes used to protect hydroxyl groups during organic syntheses. Such modification is also used to alter the **physicochemical properties**, **functional properties** or nutritional quality of substances such as **starch**, **proteins** and **carbohydrates**.

Acetylcholinesterases EC 3.1.1.7. Convert acetylcholine to **choline** and **acetates**. Act on a variety of acetic esters and also possess transacetylase activity. A number of inhibitors of these enzymes are used as **pesticides**. As such, the enzymes can be used to detect the presence of **residues** of these inhibitors in foods and **beverages**.

Acetylene Hydrocarbon which acts as a plant growth regulator and can be used to control **ripening** of **fruits**.

N-Acetylglucosamine Derivative of the amino sugar **glucosamine** in which the amino group is acetylated. Component of cell walls and **chitin**.

Acetylglucosaminidases Comprise α -N-acetylglucosaminidases (EC 3.2.1.50), which hydrolyse terminal non-reducing N-acetyl-D-glucosamine residues in N-acetyl- α -D-glucosaminides, and mannosyl-glycoprotein endo- β -N-acetylglucosaminidases (EC 3.2.1.96), which catalyse endo-hydrolysis of the N,N'-diacetylchitobiosyl unit in high-mannose glycopeptides and glycoproteins containing the [Man(GlcNAc)₂Asn structure; one N-acetyl-D-glucosamine residue remains attached to the protein, while the rest of the oligosaccharide is released intact.

N-Acetyllactosamine synthases Alternative term for **lactose synthases**.