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What to Know about Food Flavor? A Review

***Ghada S. R. Al Saqqa*[1]**

[1] Food Analysis Chemistry Dept., Ministry of National Economy, Gaza, Palestine

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ABSTRACT

The primary function of flavors is to add taste or aroma to foods, as they have no nutritional properties. According to Flavor and Extract Manufacturers Association (FEMA), flavors have a place in the food supply to meet consumer demand for a variety of safe and tasty products. This review provides an overview of the three flavor groups; natural flavors, nature-identical flavors, and artificial flavors, where they are added to replace the flavor lost through processing and to develop new products, while flavor enhancers are compounds with no intrinsic aroma or taste of their own, but when are added in low concentrations to appropriate foods, they improve the palatability of the food distinctly, a popular example is monosodium glutamate. The food industry is constantly striving to improve the quality and taste of modern food products through creating new flavors and improving existing ones. The flavors of commercially produced food products are usually created by florists who work for flavor companies. Among these commercial flavors are those that are often added to elderly food to offset the losses in their sense of smell and taste. Encapsulation can be used to treat flavors and protect them from evaporation, reaction, or disappearance from food. Flavors manufacturers need to know which ingredients are allowed in the community that includes restrictions and specific requirements for use in food applications.

Keywords: Flavor groups, Flavor enhancers, Flavorists, Encapsulation, Consumer acceptance.

INTRODUCTION

The flavor is the entire range of sensations that people perceive when they eat food or drink a beverage. Flavor encompasses a substance's taste, smell, and any physical traits they perceive (https://www.femaflavor.org/flavor-glossary-terms). While flavor enhancers are compounds that do not have a distinct flavor of their own, added to a wide range of foods to supplement, bring out, or enhance their natural flavor (https://www.faia.org.uk/category/additives/flavour-enhancers).

There are hundreds of varieties of flavorings used in a wide variety of foods, from simple food products to complex food applications. They are classified into three major categories used in food under definition agreed in

* Corresponding author. Tel: +972-599765149
E-mail address: verysmallbrine@gmail.com

Australia; natural flavoring substances, natural identical flavoring substances, and artificial flavoring substances (FSANZ, 2008). Flavor plays an important role in consumer satisfaction and influences further consumption of foods (Teixeira et al., 2004). Flavor, of course, is nearly inseparable from other product attributes such as texture, sweetness, acidity, salt, and appearance so it all gets bundled to most consumers as "taste (Jelen, 2011). Evidence is now emerging that suggests compensation for taste and smell losses with flavor-enhanced food can improve palatability and/or intake, increase salivary flow and immunity, reduce chemosensory complaints in both healthy and sick elderly (Schiffman and Graham, 2000).

Flavors are prepared by an elite group of highly trained professionals known as flavors or flavor chemists, who must undergo rigorous apprenticeship before they can become certified by the Society of Flavor Chemists (SFC,2015; http://www.bls.gov/careeroutlook/2004/winter/yawhat.pdf).

Many factors linked to aroma affect the overall quality of the food. Since processing or cooking conditions, storage, packaging, and ingredients in food often cause modifications in overall flavor by reducing their intensity or producing off-flavor components, the stability of flavors is an important criterion to preserve the properties of foods so the industry devotes a lot of money to research and development for the enhancement and preservation of flavors, as which are delicate and volatile. It is beneficial to encapsulate various food to preserve the flavor's volatile ingredients, where it is limit aroma degradation or loss during processing and storage (Gupta et al., 2016). This work explores that flavorings are compounds, many of which are natural, although many synthetic ones are added to foods to produce flavors or to modify existing flavors, and a flavorist works with a wide selection of tools like extracts, oils, and flavor chemicals to create the perfect combination. At the same time, they take into consideration how affordable, safe, and fitting the components are to the complete formulation of the end-product.

What is Flavor?

The flavor is the sensory impression of a food or other substance and is resulted from the stimulation of the chemical senses of taste and smell. The "trigeminal senses", are detected in regions of the tongue, mouth, and throat, may also occasionally determine flavor (Small and Green, 2012; Jeremy et al., 2012). Of the three chemical senses, the smell is the main determinant of a food item's flavor. While people have receptors for basic kinds of tastes; sweet, sour, bitter, salty, umami, the smells of a food are potentially limitless. The flavor of the food, as such, can be easily altered by changing its smell while keeping its taste similar.

Reasons for adding flavorings to food products:

Flavorings are added to foods in very small amounts, for various reasons, but mainly to create a character in something bland; for example, chewing gum would taste like rubber without flavor, and hard candy would taste like plain sugar (https://www.preparedfoods.com/articles/116385-flavors-in-food-products), or to create a specific flavor to food products that do not have the desired flavors, such as a soft drink, candies, snacks, and yogurt, or altering or enhancing the flavors lost during food processing of natural food product such as meats and vegetables (Ball et al., 2011). For example, pea protein has a tough aftertaste to mask, so flavor ingredients are often needed there.

How do I know if my food contains flavorings?

When flavorings are added to food, they will appear in the list of ingredients as a flavoring or a more specific description. Flavorings are generally added at between 0.1-2% of the food and are most commonly found in beverages, dairy products, confectionery, savory snacks,

and health and wellness products. Flavorings are not assigned E numbers (EFFA, 2018).

Classification of food flavors

There are three major classifications of food flavorings which are based on their origin:

Natural flavoring substances

Nature produces countless flavoring substances which provide a broad array of tastes and aromas in food. Natural flavorings are obtained from animals, fruits, spices, herbs, as well as those derived from vegetables and wine, by physical, or enzymatic processes or microbial fermentation (CIAA, 2008).

To prepare a natural flavor, the aroma chemicals must be extracted from the source substance; e.g., a natural strawberry must come from a strawberry plant – berry, leaf, or stem. Some flavorings are produced from essential oils, such as almonds and lemon. The methods of extraction can involve extrusion, solvent extraction, or distillation; e.g., menthol obtained by fractionated distillation from mint oil. Limonene is obtained by steam distillation from oranges. Vanilla; from fresh fruits by expression; flavor from ginger by extraction (Tisi,2021). The extracts are then usually further purified and subsequently added to food products to flavor them. Table (1) shows some plant produce flavors while Table (2) shows principal flavoring agents in some foodstuff.

Table 1. Some plants produce flavors

Plant type	**Examples**
Herbs	Basil, Mint, Parsley, Celery, Thyme, etc.
Spices	Cardamon, Clove, Turmeric, Peppercorns, etc.
Aromatic Seeds	Aniseed, Cumin, Fennel, Dill, Caraway, etc.
Fruits	Orange, Lemon, Apple, Banana, Strawberry, Pineapple, etc.
Vegetables	Onions, Garlic, Mushrooms, Corn, Peas, Cabbage, Turnips, etc.

Table 2. Principal flavoring agent in some foodstuff

Foodstuff	**Principal flavoring agent**
Mint	Menthol
Thyme	Thymol
Cloves	Eugenol
Pepper	Piperidine
Lemon	Citral
Garlic	Diallyl disulfide
Turmeric	Curcumin

Natural identical flavoring substances

Due to the high cost or unavailability of natural flavor extracts, most commercial flavorants are nature-identical, which means that they are chemically and organoleptically identical to natural flavors, but they are obtained by chemical processes or by chemical modification of other natural substances (not extracted from the source materials) (FSANZ, 2008). An example is vanillin, which is identical to vanilla but not obtained from vanilla pods. It is an organic compound contained in vanilla beans. It is one of the most flavorful and aromatic substances used in the food industry. Vanillin appears in everything from soda pop to baked goods (https://www.webstaurantstore.com/blog/3484/vanilla-

flavor-guide.html). Table (3) illustrates the list of known nature-identical flavoring agents.

Table 3. The list of known nature-identical flavoring agents.

Chemical	Odor
Diacetyl	Buttery
Isoamyl acetate	Banana
Cinnamic aldehyde	Cinnamon
Ethyl propionate	Fruity
Limonene	Orange
Ethyl-(E, Z)-2,4-decadienoate	Pear
Allyl hexanoate	Pineapple
Ethyl maltol	Sugar, Cotton candy
Methyl salicylate	Wintergreen
Benzaldehyde	Bitter almond
Methyl anthranilate	Grape
Ethylvanillin	Vanilla
Manzanate	Apple
2,4-Dithiapentane	Truffle

Artificial flavoring substances

Artificial flavoring is chemically synthesized compounds, have no equivalent in nature, made from inedible ingredients, such as paper pulp, petroleum, crude oil, or coal tar, by fractional distillation and additional chemical manipulation (FSANZ, 2008). Artificial flavors are often made with the same sensory characteristics (smell and taste) exactly like natural flavorings but they are chemically different. They must pass stricter safety testing, too.

Artificial flavorings are often used in food products because of the high cost, lack of availability, or insufficient potency of natural flavorings (Branen et al., 2001). Artificial flavorings are carefully selected to provide a larger and more diverse variety of flavors.

To produce artificial flavors, flavorists must either find out the individual naturally occurring aroma chemicals and mix them appropriately to produce the desired flavor or create a new, synthetic, non-toxic compound that gives a specific flavor (Flavor – Wikipedia), to obtain a food product with a unique flavor and to maintain flavor consistency between different product batches. This is most evident in artificially flavored jellies, soft drinks, and candies, which, while made of bases with a similar taste, have significantly different flavors due to the use of different scents or fragrances. Ethyl vanillin is a clear example as it is artificial and smells and tastes like vanillin yet is roughly three times more taste-intensive when added to ice cream, desserts, and bakery products. (Table 4) illustrates the most commonly used chemicals in food flavoring and (Figure1) explains different methods to create natural and artificial vanilla flavor.

Table 4. The most commonly used chemicals in food flavoring

Chemical	Flavor
Allylpyrazine	Roasted nut
Methoxypyrazines	Earthy vegetables
2-Isobutyl-3 Methoxypyrazine	Green pepper
Acetyl-L-Pyrazines	Popcorn
2-Acetoxy Pyrazine	Toasted flavors
Aldehydes	Fruity, green
Alcohols	Bitter, medicinal
Esters	Fruity

Ketones	Butter, caramel
Pyrazines	Brown, burnt, caramel
Phenolics	Medicinal, smokey
Terpenoids	Citrus, piney

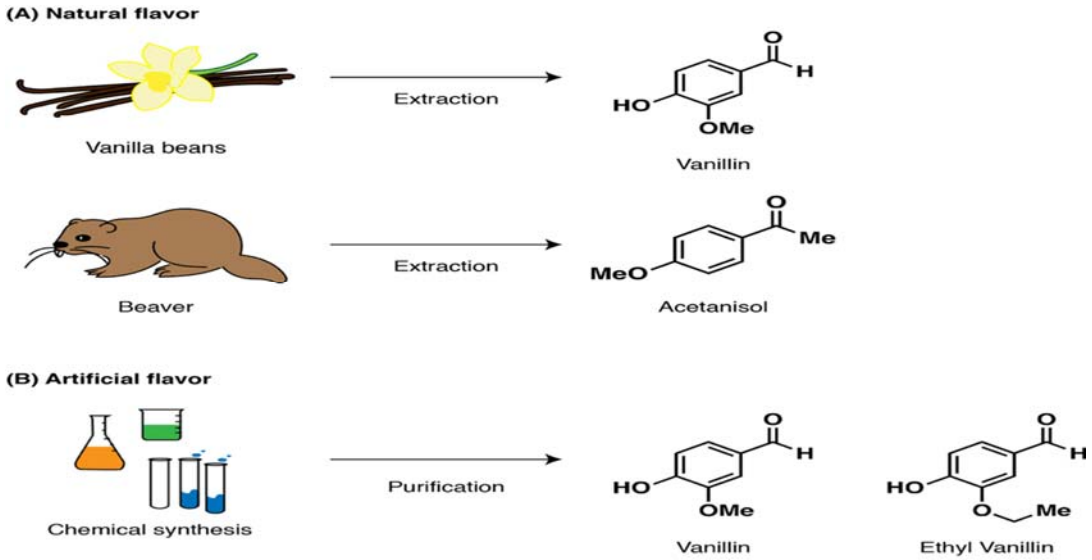

Figure 1. some related compounds can all be used to create a vanilla flavor. A) The extraction of vanillin from vanilla beans or acetanisol from the castor sacs of beavers to produce natural vanilla flavor can be challenging and costly. B) Fortunately, these compounds and other more flavorful or robust compounds like ethyl vanillin can be produced by chemical synthesis much more safely and efficientl

Benefits of artificial flavors:

Food and beverage manufacturers have used artificial flavors for decades, and they provide important benefits. For instance, artificial flavors allow people who have food allergies to safely consume flavors they might otherwise not be able to enjoy. They also allow people to enjoy a variety of food flavors even when they are out of season (https://www.femaflavor.org/flavor-glossary-terms).

The real difference between natural flavors and artificial flavors

Natural and artificial flavorings are almost identical, with subtle differences in origin. Nor are ingredients extracted from nature necessarily safer than something artificially made. In some cases, natural flavoring may be more dangerous than artificial flavoring e.g., natural flavor extracted from almonds can contain toxic cyanide but the artificial flavor has the taste but does not have cyanide (Matar, 2021). Also, the flavoring substance Saffrole was used for a long time in the manufacture of beer until it was discovered that it causes liver cancer in 1960 AD (NTP, 2016), and it was also found in 1968 that oil of Calamus, a natural flavoring substance, causes cancerous tumors in the gastrointestinal tract (Rahamooz et al., 2017).

In 1970 AD, some research indicated that consuming large quantities of licorice (more than 100 grams/day) led to harmful symptoms in humans, especially on the heart, and this was attributed to the presence of the toxic substance Monoammonium Glycyrrhizin, which is usually found with a concentration of 0.5% in licorice and it is mainly responsible for its flavor. Despite the toxicity of this substance, it is allowed to be added to many foods in small proportions ranging from 5 to 60 ppm (Sullivan,2020).

Artificial flavors are simpler in composition and potentially safer to consume than natural flavors due to the standards of purity and mixture consistency that are enforced either by the company or by law (Flavor – Wikipedia). Natural flavors in contrast can often contain solvents, emulsifiers, and preservatives, and they aren't as rigorously inspected as artificial flavors. The exception is the natural flavor used in organic foods, which can't contain those additives (Andrews, 2014), in some cases, natural flavors may have more detrimental environmental consequences than artificial flavors because natural flavors must come from resources in nature, they may involve more forest clear-cutting and carbon emissions from transport while artificial flavors are typically purer and more subject to more testing before being sold for consumption (Jacewicz, 2017).

Another difference between natural and artificial flavorings is cost. Natural flavors are more expensive than artificial. The search for "natural" sources of chemicals often requires that a manufacturer goes to great lengths to obtain a given chemical. Artificial flavorings are cheaper because they are made in the laboratory and manufacturers do not need to spend a fortune buying them from remote places, unlike natural flavorings (Reineccius, 2002). (Figure 2) illustrates that all flavors types are small chemical compounds or mixtures of compounds.

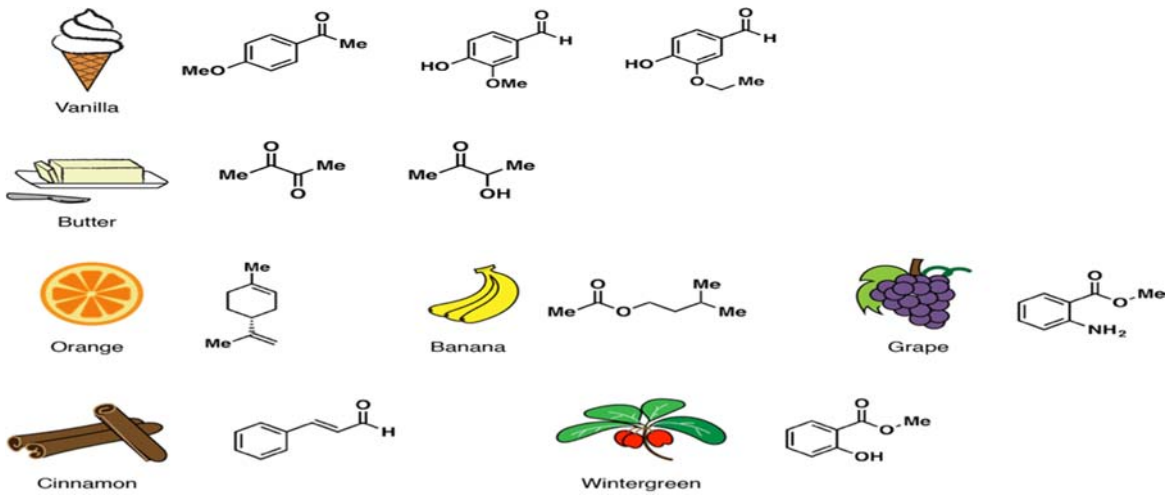

Figure 2. Natural and artificial flavor additives are small chemical compounds or mixtures of compounds.

Flavor enhancers:

Flavor enhancers are substances that have no pronounced flavor or taste itself but which bring out and improve the existing taste and/or odor in the foods to which they are added (Marja and Natasja, 2010). This means that the intended function of flavor enhancers is to enhance sweet flavor or the saltiness or acidity of the food. Salt and sugar can technically be considered flavorants that enhance salty and sweet tastes. Although salt has a distinct taste and is not classified as a food additive, it is the most commonly used flavor enhancer.

Also, the substances that enhance the sweetness of food by condensing the taste of added sugars or sweeteners are considered as flavor enhancers, which leads to the possibility of reducing the number of sweet ingredients added, in addition to the fact that some artificial sweeteners have flavor-enhancing properties and have been authorized for use as such (European Union, 2014). For example, Acesulfame K and aspartame are used to enhance the flavor of chewing gum and desserts.

The next best-known flavor enhancer after salt is glutamic acid and its salts (E 620-625), it is an amino acid, a building block of proteins, naturally produced in humans and occurring in free form, for example, in tomatoes, seaweed, cheese, soy sauce and starch (https://www.fda.gov/food/food-additives-petitions/questions-and-answers-monosodium glutamate-msg, Accessed June 24, 2020; https://en.wikipedia.org/wiki/Monosodium_glutamate#cite_ref-HealthCanada_3-0). Its content decreases during harvesting to processing causing a natural loss of flavor. This can be partly restored by adding monosodium glutamate(MSG: E621) the most common form of glutamic acid, which is the only one used to any significant extent in the food industry and has been used as flavor enhancers for over a century in savory products (Loliger, 2000). Glutamate has a unique taste of umami, it is identified as the fifth basic taste after sweet, sour, salty, and bitter in the tongue, where the umami receptor taste is located. Monosodium glutamate enhances the flavor of proteins and it increases the umami taste, the meaty, or "savory" "flavorings" in foods such as; cheese, seafood, meat broths, soups, sauces, prepared meals, sausages, and savory snacks (Giovanni, 2002).

Umami improves palatability rather than altering the intensity of other ingredients. Experimental studies have shown that MSG at concentrations up to 0.005 mol l−1 does not alter the intensities of other food ingredients including salts, sweeteners, amino acids, acids, or bitter compounds (Schiffman, 2003).

The glutamates are permitted in the EU in foods in general to a maximum of 10 g/kg. Some exceptional foods, Parmesan cheese for example, naturally contain glutamate higher than this limit, they are also added to seasonings and condiments with no numerical maximum permitted level and they must be used in line with good manufacturing practices (EFSA, 2018). But the taste of MSG is supposed to be taken into consideration as it has a self-limiting characteristic. Once the correct amount has been used, any additional quantity leads to a decrease in palatability.

MSG increases salivation and its excessive consumption leads to intolerance reaction that became known as “Chinese Restaurant Syndrome” which is a collection of symptoms that some people experience after eating Chinese food such as a burning sensation, migraine-like symptoms, and chest pain (Jayne, 2018). Compounds that are recognized as flavor enhancers and approved by the European Union include are listed in Table (5), e.g., monosodium glutamate (MSG), Glycine salts, hydrolyzed soy protein, autolyzed yeast extract, disodium guanylate or inosinate, and 5'-ribonucleotide salts.

Table 5. Umami flavorants recognized and approved by the European Union

Acid Salts	Description
Glutamic acid salts	This amino acid's sodium salt, monosodium glutamate (MSG), is one of the most commonly used flavor enhancers in food processing. Mono- and diglutamate salts are also commonly used
Glycine salts	Simple amino acid salts are typically combined with glutamic acid as flavor enhancers.
Guanylic acid salts	Nucleotide salts are typically combined with glutamic acid as flavor enhancers.
Inosinic acid salts	Nucleotide salts created from the breakdown of AMP, due to high costs of production, typically combined with glutamic acid as flavor enhancers.
5'-ribonucleotide salts	Nucleotide salts are typically combined with other amino acids and nucleotide salts as flavor enhancers.

Certain organic and inorganic acids shown in Table (6) can be used to enhance sour tastes, but like salt and sugar, these are usually not considered and regulated as flavorants under law. Each acid imparts a slightly different sour or tart taste that alters the flavor of food (Da Conceicao Neta et al., 2007).

Table 6. Some organic and inorganic acids used to enhance sour tastes

Acid	**Description**
Acetic acid	Gives vinegar its sour taste and distinctive smell.
Ascorbic acid	Found in oranges and green peppers and gives a crisp, slightly sour taste, better known as vitamin C.
Citric acid	Found in citrus fruits and gives them their sour taste.
Fumaric acid	Found in bolete mushrooms, Icelandic moss, and lichen Not found. in fruits, used as a substitute for citric and tartaric acid. Enhances flavor and sourness.
Lactic acid	Found in various milk or fermented products and give them a rich tartness.

Malic acid	Found in apples and rhubarb and gives them their sour/tart taste.
Phosphoric acid	Used in some cola drinks to give an acidic taste.
Tartaric acid	Found in grapes and wines and gives them a tart taste. Also called racemic acid.

Flavor creation

The flavor creation begins when the flavorist receives a brief from the client. In the brief, the client will attempt to communicate exactly what type of flavor they seek, in what application it will be used, and any special requirements (e.g., must be all-natural). The flavorist will use his or her knowledge of the available chemical ingredients to create a formula and compound it. The flavor will then be submitted to the client for testing. Several iterations, with feedback from the client, maybe needed before the right flavor is found. Additional work may also be done by the flavor company. For example, the flavor companies may conduct sensory taste tests to test consumer acceptance of a flavor before it is sent to the client (http://dictionary.sensagent.com/Flavor/en-en/#Flavor_creation). Flavorings can help to create tasty food and beverage products to reduce the concentration of some ingredients, without impacting the palatability of the food in question.

Requirements of good flavor

The quality of food significantly relies on its rheological properties such as stability of the flavors and aromas during production and storage (Estevinho and Rocha, 2017). In most products, the flavor starts to decline and can be degraded by exposure to light or be lost during packaging, through heat processing, or evaporation (Mannie, 2007). So the flavor companies keen to ensure flavorings must be compatible with other prime constituents in the end product, be resistant to processing or cooking conditions so that the flavor is only released when eaten by the end consumer, retaining the natural flavor while processing is counted as art, means that the flavor should be stable before, during and after incorporation into the finished product.

For example, The flavor form used in food depends on its application in a food product. For example, in beverages, the flavor is in liquid form, as they can easily mix in the beverage matrix and remain more stable throughout the process. However, for applications like instant mixes of bakery products, powder flavor is more convenient to use (Patil, 2018). Also, proteins are well known for their ability to form new covalent bonds with aldehydes and ketones, which are typical flavor ingredients. These materials are lost, and baking, frying, and heat processing all accelerate these processes and more flavor can be lost due to volatilization (Leusner, 2011).

DeRovira, 2015 explained, “Flavors need to be evaluated in the product but not in the bottle. A flavor may taste or smell terrible in the bottle, but could still work well in the product. Detailed information about the product needs to be provided to the flavor house.

Encapsulation to retain flavors:

As mentioned earlier flavor stability in different foods has been of increasing significant attention (Given, 2009), because of its relationship with the quality and

acceptability of foods, but it is difficult to control. Manufacturing and storage processes, packaging materials, and ingredients in foods often cause modifications in overall flavor by reducing aroma compound intensity or producing off-flavor components (Lubbers et al., 1998). Many factors linked to aroma affect the overall quality of the food, examples are Physico-chemical properties, concentration, and interactions of volatile aroma molecules with food components (Landy et al., 1995). To limit aroma degradation or loss during processing and storage, it is beneficial to encapsulate volatile ingredients before use in foods or beverages.

Encapsulation is one way to preserve flavor, where it is the technique by which one material or a mixture of materials is coated with or entrapped within another material or system. The coated material is called active or core material and the coating material is called a shell, wall material, carrier, or encapsulant (Madene et al., 2006). Encapsulation of flavoring materials is one of the most active areas currently under development. The encapsulation process provides many advantages as it prolongs the shelf life of flavors and forms a protective envelope against adverse ambient conditions, can protect flavors from ingredients and conditions like heat, moisture, prevents undesirable interactions between food ingredients and flavor molecules, ensures release of flavors at the right time and as intended, allows control of some physical properties such as size and shape, thus, particles at the desired shape and size can be obtained (https://www.aromsa.com/encapsulation).

an encapsulation work is focused on three different areas: proteins, fats, and carbohydrates. Encapsulation does not give protection from oxidation, but it prevents the flavors from volatilization. The most important technology in terms of protection revolves around polymers or proteins. The carbohydrate encapsulation helps with shelf stability, especially in dry applications. The third type, fat, helps to protect flavors against moisture and releases heat. This works in things like microwave products that are warmed before eating (Lynn,1996).

Dietary restrictions

Food manufacturers are sometimes reluctant about informing consumers about the source from where the flavor is obtained and whether it has been produced with the incorporation of substances such as animal by-products glycerin, gelatin, and the like, and the use of alcohol in the flavors. Muslims, Orthodox Jews, and Hindus adhere to religious laws, and vegans to personal morals, that restrict the use of animal by-products and alcohol in foods unless subject to oversight and inspection by their respective religious authority or less-strict or circumstantial moral belief (Flavor – Wikipedia).

Conclusion

Flavoring agents are the largest group of food additives, which are added to foods to impart or modify the taste and/or odor, while flavor enhancers are another type of food additives with great importance to the food industry and the consumer in terms of increasing the power of product flavor. Both Flavoring agents and flavor enhancers have no nutritional properties.

Flavor substances of natural and synthetic origin have been widely used in human food. Both of them play an important role in making our food and beverages taste so good. Artificial flavors are simpler and safer than their natural flavoring counterparts.

Flavors have a tremendous power to influence the appetite, they may be used to make healthy food products; like those lacking an excess of sugar or trans-fats more appealing, Also, flavor agents may make reduced-fat foods seem rich and creamy, or add salty zest to low-sodium products. Also, commercial flavors are often added to the elderly to compensate for the diminished

appetite that occurs due to their impaired sense of smell and taste.

Nothing is more important for the consumer acceptance of foods than flavor, so flavorists who are working on flavor companies, prepare mixtures of flavors to meet consumer flavor preferences while following a stringent set of safety and efficiency guidelines. Flavors manufacturers need to know which ingredients are allowed in the community that includes restrictions and specific requirements for use in food applications.

Flavorists, also work to ensure flavorings must be compatible with other prime constituents, be resistant to processing or cooking conditions, storage, packaging that often cause alterations in overall flavor by reducing their intensity or producing off-flavor components, that affect food properties. Therefore, significant attention has been paid to improving flavor retention due to the instability of volatile flavors in the presence of air, light, moisture, or high temperature and retaining the natural flavor during processing is an art, meaning that the flavor should be stable before, during and after incorporation into the finished product so that the flavor is not released except when eaten by the end consumer, so it is useful to encapsulate various food because encapsulation process in general; add a distinction to food products and provide benefits to the food industry such as provides convenience in storage, enables a longer shelf life for flavors, prevents undesirable interactions between food ingredients and flavor molecules, allows controlled release. In other words, ensures the release of flavors at the right time and as intended.

The close collaboration between flavor manufacture and the user industries ensures the high standards of manufactured food products and ensures that flavorings are used under optimum conditions. The better the communication between consumers and creative flavors the better the chances of success for the end product.

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ماذا تعرف عن نكهة الطعام؟: مراجعة

غادة السقا

وزارة الاقتصاد الوطني، غزة، فلسطين

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ملخص

تتمثل الوظيفة الأساسية للنكهات في إضافة طعم أو رائحة إلى الأغذية، حيث ليس للنكهات قيمة غذائية. ووفقًا لجمعية مصنعي النكهات والمستخلصات، فإن الغرض من إضافة النكهات للغذاء هو تلبية طلب المستهلكين في الحصول على مجموعة متنوعة من المنتجات الآمنة واللذيذة.

تقدم هذه المراجعة نظرة عامة على المجموعات الثلاثة للنكهات؛ النكهات الطبيعية والنكهات المماثلة للطبيعة والنكهات الاصطناعية، حيث يتم إضافتها لتعويض النكهة المفقودة أثناء المعالجة ولتطوير منتجات جديدة، بينما محسنات النكهة هي إضافات غذائية تعزز نكهة الأطعمة دون أن يكون لها رائحة حقيقية أو طعم خاص بها، ولكن عند إضافتها بتركيزات منخفضة إلى الأطعمة المناسبة فإنها تعمل على تحسين استساغة الطعام بشكل واضح، ومن أشهر أمثلتها الجلوتامات أحادية الصوديوم.

تسعى صناعة المواد الغذائية باستمرار إلى تحسين جودة ومذاق المنتجات الغذائية الحديثة من خلال إيجاد نكهات جديدة وتحسين الموجود منها. وعادة ما يتم انتاج النكهات للمنتجات الغذائية التجارية من قبل خبراء النكهات الذين يعملون لصالح شركات النكهات. ومن بين هذه النكهات التجارية تلك التي تضاف غالبًا إلى أطعمة كبار السن لتعويض الخسائر في حاسة الشم والتذوق لديهم. ويمكن استخدام التغليف لمعالجة النكهات وحمايتها من التبخر أو التفاعل أو اختفائها من الطعام. ويحتاج مصنعو النكهات إلى معرفة المكونات المسموح بها في المجتمع والتي تتضمن قيودًا ومتطلبات محددة للاستخدام في التطبيقات الغذائية.

الكلمات الدالة: مجموعات النكهات، محسنات النكهات، خبراء النكهات، التغليف، قبول المستهلك.