

#### 4. THE NEED AND TECHNOLOGICAL FUNCTION OF FLAVOURINGS IN FOOD

The flavour of food is the most important component to the taste of that food and plays an important role in its consumption and acceptance. In addition, the flavour, taste and aroma of food stimulate salivary flow and consequently aid digestion and metabolism.

Flavourings are essential ingredients in the preparation of food demanded by today's consumers. A pleasant and interesting diet that offers a variety of flavours will not only be more acceptable but will encourage a more healthy lifestyle. A nutritionally balanced diet is best achieved through consumption of a variety of foods that do not compromise on taste.

The historical role of flavourings in food manufacturing was reviewed by Hall and Merwin (1981\*) who provided several basic definitions. "Flavor" was defined as "... the sum of those characteristics of any material taken in the mouth, perceived principally by the senses of taste and smell and also the general pain and tactile receptors in the mouth, as received and interpreted by the brain." A flavour was further defined as "a substance which may be a single chemical entity, or a blend of chemicals of natural or synthetic origin (i.e. flavouring substances) whose primary purpose is to provide all or part of the particular flavor effect to any food or other product taken in the mouth." (Hall and Merwin, 1981\*).

Hallagan and Hall (2009\*\*) provide descriptions of a series of definitions related to flavour manufacturing including an explanation of how individual flavouring substances and other functional ingredients are combined to create a flavouring or a "compounded flavour." Compounded flavours in modern food manufacturing are often mixtures of as many as one hundred or more flavouring substances, some of them complex mixtures themselves, chosen to provide a particular taste sensation. Other flavour ingredients, such as solvents, emulsifiers and antioxidants are required to allow the compounded flavour to function properly in the food to which it is added. Flavour ingredients that impart or modify flavour (i.e., provide a taste sensation) are referred to as "flavouring substances" and include individual substances referred to as single chemically-defined flavouring substances, and natural materials such as extracts, essential oils, and oleoresins that are also referred to as natural flavouring complexes. (ref. Codex Guidelines for the Use of Flavourings) (CAC/GL 66-2008, Code of Practice Annex III)

Cultural and regional preferences, together with the local availability of foods and associated taste, result in different appreciations of flavourings by different populations. Considering the wide variety of foods that are

consumed and the complexity of the flavours of these foods, a large number of flavouring ingredients are used globally.

Individual flavouring substances that occur naturally in food, together with the flavours generated through cooking and other sorts of preparation of food for human consumption account for the majority of flavourings found in the daily intake of food. Even in industrialized countries, added flavouring materials represent only a minority of the flavouring materials that we consume.

Flavouring substances are among the most rigidly evaluated and tested food ingredients and as such can be regarded safe under their conditions of intended use. Many flavouring substances are self-limiting in their use and as such the consumer is able to detect the presence of flavouring substances by personal appreciation, but would also deny appreciation at the moment of over-application of flavourings. Effective and informative flavour labeling provisions ensure compliance with applicable laws and as such inform consumer needs and expectations.

The following technological functions of flavours can be identified:

1. The addition of flavourings can be necessary to compensate for the loss of flavour during the processing and storage of foods such as pasteurized foods.
2. Flavourings can be used to assist to compensate for reductions in undesirable food ingredients such as fat, sugar, and salt.
3. Flavourings may be used to compensate for natural seasonal or geographical variations in crops. The use of flavourings can compensate for supply limitations by helping to standardize the flavour of food.
4. Flavourings are used to create recognition such as when a food's characteristic flavour is adapted to preferred local tastes.
5. Flavourings can be critical ingredients because some food and beverage products would simply not be acceptable without the addition of flavourings such as soft drinks, edible ices, confectioneries, and milk desserts.
6. Many food products require a specific flavour note to characterize them among other similar products of the same food category such as citrus soft drinks, mint candy, and panettone cake.
7. Flavourings provide novelty and innovation through combinations of flavourings that provide interest and variety such as mango/passion fruit ice cream, and chicken tikka.

8. The production of foods based on bland, nutritionally valuable ingredients for underfed populations may be made more acceptable through the use of flavourings. In addition, palatable foods can now be made more widely available to larger parts of the population.

\* Hall R.L. and Merwin E.J. The role of flavors in food processing. *Food Technology*. 35, 46. 1981.

\*\*Hallagan J.B. and Hall R.L. Under the conditions of intended use ó New developments in the FEMA GRAS program and the safety assessment of flavor ingredients. *Food and Chemical Toxicology*. 47, 267. 2009.