February 2022

EFFA Fact Sheet on Flavourings with Modifying Properties (FMPs)

As dietary habits evolve, the demand for foods and beverages with lower sugar, fat or salt content increases.

Often, there are taste challenges that come along with "better-for-you" products. There are flavouring ingredients with characteristics that can help improve the consumer's experience of these products. They are called "Flavourings with Modifying Properties" (FMPs) and they help to make healthier products taste great. They form an integral part of the food ingredient group known as flavourings.

Flavour comprises the entire range of sensations that we perceive when we eat food or drink beverages including taste, smell, and any physical traits we perceive in our mouth, such as "heat" (for example, cinnamon) or "cold" (for example, peppermint).

In fact, flavourings can be found naturally occurring in all foods; they are one of the main reasons why we enjoy eating.

The majority of flavouring materials used in a compounded flavouring (i.e. flavouring formulation) impart the overall desired flavour perception by providing a particular taste and/or aroma. Some FMPs have little or no characteristic flavour of their own, but they may be used to help balance the overall flavour profile of the foods to which they are added.

In the European Union (EU), the use of flavourings is covered by the European Flavouring Regulation (EC) No 1334/2008. Article 2 defines the scope of the Regulation. Substances which have exclusively a sweet, sour or salty taste are excluded from the flavouring definition.

Therefore, it first has to be demonstrated if a substance really has flavouring properties and is not an ingredient with only sweet, sour or salty taste properties.

The EU Commission issued a Commission Guidance[1] that provides criteria to classify a substance as an FMP and which states that the legal status of the ingredient depends on its intended functional effect in the final food.

In our EFFA Guidance document[2] we have indicated that the intended effect has to be proven by measured effect. In other words, it is the determined "*functional or technological effect*" in the final food, rather than the intended effect, that determines how it will be regulated.

The final labelling reflects the legal status of the ingredient under consideration, i.e., flavouring or non-flavouring food ingredient (e.g an additive). The next section provides further explanations on the sensory testing.

1 EU Commission Guidance notes on the classification of a flavouring substance with modifying properties and a flavour enhancer. Available at http://effa.eu/library/guidance-documents

2 EFFA Guidance on Flavourings with Modifying Properties (FMPs). Available at http://effa.eu/library/guidance-documents

Measuring The Flavouring Effect

The industry uses sensory evaluation to determine the technological effect i.e., whether an ingredient is a flavouring or a non-flavouring food ingredient (e.g., sweetener). To help distinguish between the two, the industry has developed well-defined procedures to determine the effect in the food or beverage.

To label an ingredient as a flavouring in food, taste impressions have to go beyond simply sweet, salty or sour. Companies use sensory data from two tests to ensure that the ingredient intended to be used as an FMP, meets the flavouring definitions. Here is an example of how they work to distinguish flavouring effect from sweetening effect:

TEST 1

The first test should demonstrate that the ingredient which is subject to testing (i.e., the potential FMP) does not have inherent sweetness under the conditions of intended use (for further details please refer to the FEMA Guidance Document on Sensory Testing)[3]. A control sample (without the potential FMP) containing sucrose at its recognition threshold concentration is compared with a test sample containing the potential FMP.

Control Sample
Recognition threshold concentration of sucrose, **without** the potential FMP added

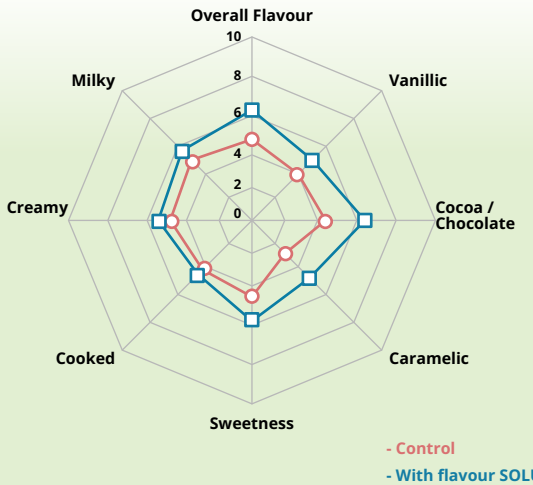
Test Sample
containing the potential FMP

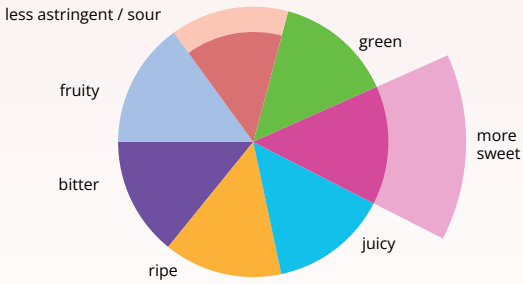
The test should demonstrate that the sweetness of the potential FMP alone (at the intended use level) is less than that of the recognition threshold concentration of sucrose (or other relevant substance) in the sample matrix evaluated. If that is not the case, it is not an FMP and there is no need for a second test.

3 Attachment X - Annex III of the EFFA Guidance Document on FMPs- Harman et al. 2013 Available at http://effa.eu/library/guidance-documents

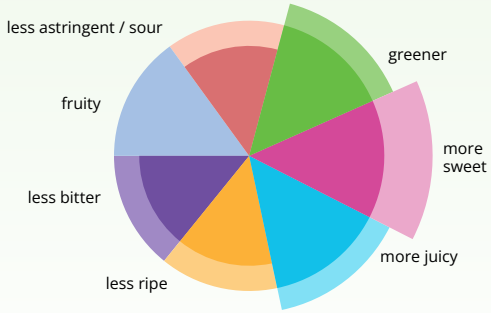
TEST 2

If the first test is passed, then the second test is used to check the impact of the flavouring on the sensory profile of the food product, e.g. a dairy-based or water-based drink, under the conditions of intended use.





The increased perception of sweetness is by far the primary effect. Thus, the result of the sensory testing does not support that the ingredient is used as flavouring.



Multiple attributes have been modified through use of the ingredient, in addition to increasing the perception of sweetness. This confirms its intended use as a flavouring.

Important to note: In order to be considered an FMP, i.e. a flavouring, the ingredient has to pass both tests.

Flavouring or Non-Flavouring Food Ingredient?

Neohesperidine DC (NHDC) is an example of a material that fits into different labelling scenarios based on its function in food and beverages. As a typical multifunctional material, NHDC can be classified as flavouring or as non-flavouring food ingredient (e.g., a sweetener) according to its determined functional or technological effect in the final food.

Let's illustrate this: at high concentrations, NHDC imparts sweetness. At lower concentrations NHDC is able to increase specific characteristics of the final food/beverage, such as the perceived fruitiness or jammy characteristic. At the same time NHDC reduces the perceived bitterness of the food/beverage.

The perceived change induced by NHDC in the overall taste profile of the final food/beverage is based on the modification of the unique flavour profile characteristics and does not result in a sweetness modification as the primary effect. Thus, only when the effect achieved in the food is a flavour modification, NHDC can be classified and labelled as flavouring. Sensory data ensure the intended use as flavouring and are crucial in determining the dose for the intended application.

An FMP can be labelled as a flavouring only if it is used consistently within the established conditions of intended use as a flavouring in the food product, confirmed by sensory testing as needed.

Sensory Testing Responsibilities

Each flavour company is responsible for providing the recommended dosage of the compounded flavouring to be added to the food or drink product of interest based on sensory testing.

This means that the flavour company is responsible for performing tests on any FMP that they will supply to the food company to assure that there is support for the conclusion of "regulatory authority to use" (i.e. to ensure the proper use as flavouring). If the food company decides to change the recommended FMP dosage, or combine an FMP "X" with other FMPs, or use it in a different application/food category, the flavour company sensory tests of the FMP "X" are not valid anymore, and the food company is responsible for the sensory testing to ensure the proper use as flavouring.

European Flavour Association (EFFA)
Avenue des Arts, 6
1210 Brussels (Belgium)

For more information, please consult your flavour partners or visit **www.effa.eu**