Ch.8 Flavour Enhancers

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Flavour enhancers

• **Flavour enhancers:** are substances that have no pronounced flavour or taste of their own but which bring out and improve the flavours in the foods to which they are added.

• Although *salt* has a distinctive taste of its own and *is not* classed as a food additive, it is in fact **the most widely** used flavour enhancer.
• The next best known is glutamic acid and its salts, most commonly found in the form of monosodium glutamate, which has been used for several centuries as a condiment in savoury products.

• Glutamic acid is a normal constituent of all proteins, non essential amino acid and present in the body.

• Anyone showing a reaction to MSG used as an additive would necessarily also react to foods that contain it naturally in high quantities, such as tomatoes and cheese.
• So flavour enhancers is group of additives that has attracted adverse attention, in particular monosodium glutamate (MSG:E621), which is widely blamed for an intolerance reaction that became known as “Chinese Restaurant Syndrome”.

• Chinese restaurant syndrome: is a collection of symptoms that some people experience after eating Chinese food.

A food additive called monosodium glutamate (MSG) has been implicated, but it has not been proved to be the substance that causes this condition.
• **Causes:**

• In 1968, reports of **serious reactions** to Chinese food were first described.

• **MSG** was felt to be the cause of these symptoms.

• Since then, many studies **have failed** to show a connection between MSG and the symptoms that some people describe after eating Chinese food.

For this reason, MSG continues to be used in some meals.
Symptoms

- Chest pain
- Flushing
- Headache
- Numbness or burning in or around the mouth
- Sense of facial pressure or swelling
- Sweating
• Some **sweeteners** have also been found to have flavour-enhancing properties and have been authorized for use as such.

> For example,

• Acesulfame K and aspartame are used to enhance the flavour of chewing gum and desserts.
E620 Glutamic acid

• Sources

• **Glutamic acid** is an amino acid found in abundance in both plant and animal **protein**. In humans it is a non-essential amino acid, i.e., the body is capable of producing its own glutamic acid, and is not dependent upon getting glutamic acid from ingested food. Tomatoes, seaweed and starch are rich sources of glutamic acid.

• Of its salts, **monosodium glutamate** (MSG) is the only one used to any significant extent in the food industry.
• Synthesizing MSG:

✓ MSG is made by bacterial fermentation, usually starting from starch or molasses.

✓ The product of fermentation is separated by filtration,

✓ and neutralized with an alkaline sodium salt such as sodium hydroxide.
• Glutamic acid salts:
  - E621 Monosodium glutamate
  - E622 Monopotassium glutamate
  - E623 Calcium diglutamate
  - E624 Monoammonium glutamate
  - E625 Magnesium diglutamate

• are commonly referred to in the industry as glutamate.
Function in Food

- Glutamate is used to develop and enhance the flavour of, mainly, savoury products.

- It also has its own characteristic flavour, which is considered by some people to be a fifth basic taste, “umami”, in addition to the original four of sweet, salt, sour and bitter.

Umami is a Japanese word that means pleasant taste.
• Limitations

• The glutamates are permitted in Directive 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 permitted in seasonings and condiments. But we have to take into consideration that the taste of MSG has a self-limiting characteristic. Once the correct amount has been used, any additional quantity leads to a decrease in palatability.
• Typical Products

• Soups,

• sauces,

• prepared meals

• and sausages.
Disodium inosinate

- **Disodium inosinate** (E631) is the disodium salt of inosinic acid. It is used as a food additive.

- Inosinic acid: occurs naturally in muscle tissue and arises as a product of the decomposition of meat.

  ➢ **Disodium inosinate** often found in:
  - instant noodles,
  - potato chips,
  - and a variety of other snacks.
Use as a food additive:

- Disodium inosinate is used as a flavor enhancer, in synergy with monosodium glutamate (MSG) to provide the umami taste.

- It is often added to foods in conjunction with other flavour enhancer known as disodium guanylate; the combination is known as disodium 5-ribonucleotides.

- As a relatively expensive product, disodium inosinate is usually not used independently of glutamic acid;

if disodium inosinate is present in a list of ingredients, but MSG does not appear to be, it is possible that glutamic acid is naturally occurring in another ingredient like tomatoes.
• **Origin**

• Disodium inosinate is generally produced from meat or from fish.

• Therefore, may not be suitable for vegetarians, and in most cases not suitable for Jews and Muslims, depending on the origin of the product.
• **Toxicology and safety**

• Inosinic acid are degraded to uric acid in the human body. Therefore, the storage of uric acid may occur, which may be problematic in the case of an already-existent pathology with regard to uric acid, such as gout.

• A review of literature by an **FDA committee found no evidence of carcinogenicity or adverse effects on reproduction**.