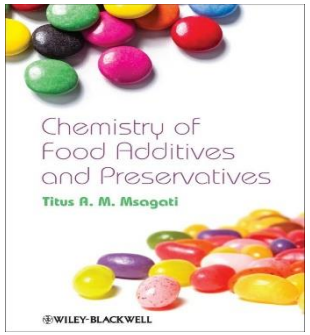
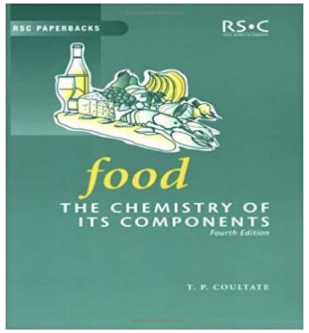
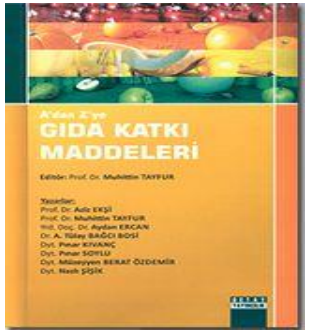
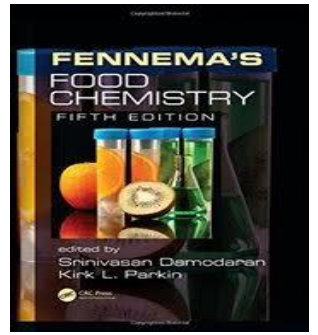
4. Week: SAFETY OF FOOD ADDITIVES AND E CODES

1. 

2. 

3. 

4. 

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SAFETY OF FOOD ADDITIVES AND E CODES

Regulating quality control certificates to control the legal use of all additives and development of standard methods for their experimental analysis organized by institutions such as; **JECFA** (Joint Expert Committee on Food Additives established at the UN level by FAO / WHO), **EFSA** (European Food Safety Authority at European Union level) and **FDA** (American Food and Drug Administration in the USA).

This task is carried out by the **Food Agriculture and Livestock Ministry in Turkey**. In addition, it is an imperative that the Turkish Food Codex complies with EU food legislation in accordance with the Customs Union.

It is not easy for a chemical to gain food additive status. It is necessary to go through technological, toxicological and analytical processes and the following general criteria should be appropriate:

1- Lack of another technological option or necessity of consumer appreciation or expectation

2- Health hazard or harmless dose determined based on toxicological research

3- Purity criteria must be determinable and controllable

4- It must be a valid analysis method for the quantitative analysis of the amount of residues or derivatives in food

For the safety of food additives, the most valid toxicological criterion is ADI (Acceptaple Daily Intake) value. This value shows the daily inconvenient dose of that additive for human in milligrams per kilogram of body weight (mg / kg.va). The ADI value is calculated by dividing the harmlessness level (NOEL value, mg / kg.va) determined for the experimental animal by a safety factor (usually 100). These toxicological studies on food additives are periodically evaluated by JECFA and ADI values determined accordingly are published.

- ADI value is not always numeric. A numerical ADI value is not required to be determined for food additives that are not considered to be harmful with food, and their ADI status is specified as NS (not specified). The maximum level of these additives in food is stated as QS (quantum sale: amount unlimited) and not numerically.

In order to determine the conditions of safe use, it is necessary to know the daily consumption amount of that food and the daily amount of that additive taken with other foods. If it is known, the maximum level in the food to which that additive is permitted can be calculated by the following equation:

$$MD = [(ADI \times IA) - (DG)] \times 1000 / GT$$

MD= The maximum level of the additive allowed to add to the food (mg / kg, food)
ADI= Value of the ADI additive (mg / kg.va), average human weight (60 kg)
DG= The additive taken from other foods (mg / person. day),
GT= The daily consumption of that food (grams / person.day)

In order to allow food additives, it is compulsory to use certain additives as well as to meet certain criteria:

1- It should only be used in foods for which it is permitted (specified in the relevant regulation).

2- The maximum level permitted in the application (specified in the relevant regulation) must not be exceeded.

3- The food, which the additives are applied should be flawless, should not be used to cover any defects, and should not mislead the consumer.

4- It should be stated on the label of the food where the additive is used.

Indicating the Additive on the Food Label, and its E Code

The additive used must be indicated on the food label with either its "function and name" or its "function and E code".

E code; is a number that is completed by toxicological researches and it is given by the EU to the food additives whose conditions of safe use are known. For example; It is the code of E100 curcumin (colorant), E210 benzoic acid (preservative), E252 potassium nitrite (preservative), E310 propyl gallate (antioxidant), E951 aspartame (sweetener).

In terms of consumer safety, the EU recommends that member countries use food additives with an E code first. Because with E code application, many benefits are provided:

1- The chemical name of some food additives is very long. It is very difficult to indicate such additives on the label of multi-component foods or small packaged foods, even if indicated.

2- The chemical name of most food additives is also not meaningful to most consumers.

3- Many food additives have more than one name or synonym. Therefore, different producers have the possibility to indicate the same contribution under different names.

4- An international communication language is formed with the E code, the same symbol has the same meaning in every country and thus, international food trade becomes easier.

5- Since the E code is the symbol of safe food additives, the consumer knows that the additive used is safe even if he does not know the meaning.