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EMULSIFIERS IN FOOD

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Abstract. *This article discusses emulsifiers and chemical substances added to food, their manufacturers.*

Keywords: *food, emulsifier, chemical substance, emulsion.*

ЭМУЛЬГАТОРЫ В ПИЩЕВЫХ ПРОДУКТАХ

Аннотация. *В статье рассматриваются эмульгаторы и химические вещества, добавляемые в пищевые продукты, их производители.*

Ключевые слова: *продукты питания, эмульгатор, химическое вещество, эмульсия.*

Emulsifiers (Latin: sogaman) are substances that form emulsions, stabilizers of emulsions.

Emulsifiers include natural and artificial compounds (some salts, bases, organic acids, soaps, amines, etc. surfactants), substances in powder form that are soluble in one of the 2 phases that make up the emulsion. The substance used as emulsifiers must contain hydrophilic and hydrophobic parts (regardless of its degree of dispersion), since almost all emulsifiers can be called surfactants. Emulsifiers with a strong hydrophilic part serve to obtain M/S type emulsions (i.e. oil-in-water emulsions). Emulsifiers with strong hydrophobic parts are used to form S/M type emulsions (i.e., water-in-oil emulsions).

If 10 ml of benzene is added to 10 ml of water and shaken, two different emulsions can be obtained. When hydrophilic emulsifiers are added to this mixture, the non-polar (hydrogen) part of the emulsifier molecule will immerse in oil droplets, and the polar part (—SOON, — ON, — 1MN2 groups) will immerse in water droplets, but hydrophilic emulsifiers are more attracted to water, as a result of which most of the emulsifier volume will be immersed in water, and a small part in benzene.

Therefore, a membrane of emulsifiers is formed around the benzene droplet; this droplet is well surrounded by emulsifier molecules. As a result, the M/S type emulsion is stabilized. When hydrophobic emulsifiers are added, an S/M type emulsion is formed.

Emulsifiers are chemical additives that are added to food products by manufacturers for various purposes. Emulsions are substances consisting of two homogeneous liquids. According to scientists, the two substances do not completely penetrate each other, but rather remain in each other in the form of droplets with a size of ten to twenty micrometers. Cosmetics, feed additives, machine oils and paints are considered emulsifiers. Some emulsifiers are more expensive than the product itself.

They ensure that the product has a beautiful color, a pleasant texture and a beautiful shape, and also do not melt. The most commonly added emulsifier in consumption is iodine, which is used against bull disease. Emulsifiers, also known as leavening agents, are added to baked goods to help them rise and become fluffy.

Some emulsifiers are derived from other foods, while others are invented. Some people believe that these additives are harmful to human health, even though many of these chemicals occur naturally in foods that humans have been consuming for centuries.

There are over a hundred types of food additives, which can be divided into six categories:

1. Preservatives.
2. Enhancers.
3. Flavorings.
4. Colorings.
5. Thickeners and stabilizers.
6. Emulsifiers, stabilizers, and thickeners, as well as acids and alcohols.

•An example of a preservative is salt, which protects food from the growth of bacteria that cause spoilage. Preservatives are antioxidants, which prevent the rancidity of fats and oils and the discoloration of food.

•An example of a enhancer is iron, minerals, and vitamins added to foods to increase the amount of vitamin B in them. Vitamin B is also added to it. Its price is more expensive than the price of flour. Adding this vitamin to flour and other products is very beneficial. Vitamin D added to milk prevents the diseases of "rickets" and "bone fragility" that occur in children.

•Flavoring emulsifiers include natural fruits and spices. They also contain unnatural chemicals, such as vanillin, which is added to ice cream. Some substances, such as monosodium glutamate, have no taste or smell of their own, but they help to improve the taste of natural foods.

•Coloring emulsifiers are used to make chemical foods look like natural foods.

Manufacturers of chemical margarine add yellow coloring to make it look like butter. Food manufacturers also add coloring to some products to restore the natural color of food during the canning process. Some colored emulsifiers, such as orange, are also added to make the product more attractive.

• Emulsifiers, stabilizers, and thickeners are used to help ingredients mix together more easily. The emulsifier “Algin” added to ice cream helps ingredients mix together and solidify.

Among the stabilizers, “crozinin,” which is most commonly used in milk chocolate, prevents the product from curdling. Pectin and gelatin are added to fruit jams and cocktails.

• Acids and alcohols serve to maintain chemical balance in some foods. Alcohol neutralizes strong acids in foods like olives and peas. Just as citric acid imparts a tart flavor to fruit juices, certain acids impart a distinct flavor to foods. And carbonic acid is used to gasify juices.

Certain governments set strict limits on the substances that can be added to foods. Laws also set specific criteria for the addition of substances to foods. However, these laws vary from country to country. According to these rules, only certain substances can be added to certain foods.

For example, the European Community has prepared a list of additives that are generally considered safe in Europe and the world. The general safety of foods is based on animal testing.

Based on these experiments, the amount of substances added to food daily for humans has been determined. The organization that conducts the most research in this regard is “JECFA”.

Features of emulsifiers:

• Disperse medicinal substances for better absorption into the body.

• Eliminate unpleasant tastes and odors in fat and fat-like odorous products.

• Extend the effect of the drug and increase its function according to its ability.

• Water has the potential to be a cheap and powerful resource in breaking down medicinal substances.

Emulsifiers are divided into two according to their liquid state:

• Oil in the water. In this case, the external state is water, and the internal state is oil. An example of this is milk, in this form gummiarabics are used, which attract water from substances.

• The presence of water in the oil. This is the reverse of the above and is used in substances such as wool oil and beeswax that counteract the attractiveness of oil. An example of this is cheese.

What is the Sharia ruling on emulsifiers added in the food industry, which are harmful to human health when consumed, and whose origin is unknown?

One of the most common problems today is the ruling on emulsifiers used in food and medicines. The encyclopedia “WIKIPEDIA” defines an emulsifier as follows: “A substance that is not in the natural recipe and is added to a mixture at any stage of the preparation process to change its quality.”

In particular, it is added to preserve the product, improve its sensory and physical qualities, and protect it from various toxins that can harm health as a result of improper storage. Emulsifiers play a major role in not only making the appearance of products beautiful, but also improving their taste. Emulsifiers can include a wide variety of substances.

However, it is no secret that some emulsifiers, such as hydrocarbons, benzopyrene, and some aniline dyes, are carcinogenic substances, similar to aflatoxins. An example of this is the fact that certain substances, such as sulfoximine and methionine, and nitrogen chloride, form poisons when combined. When expert scientists experimented with these substances in puppies, they caused colic. The substances sulfoximine and methionine were the cause of this disease. All this information is presented in Dr. Ibrahim Afana's reports on emulsifiers. In addition, there are a number of negative aspects of these substances, some of which we will briefly list:

1. It serves to hide some defects in food.
2. Sometimes it serves to improve the appearance of the product.
3. Food manufacturers rely on emulsifiers and ignore the health conditions of the products.
4. The chemical attractiveness of the products leads people, especially children, to consume more than the required amount, which is harmful.
5. Some emulsifiers have long-term toxic effects.
6. Some manufacturers do not comply with the required standards and do not pay attention to the origin of the emulsifiers.

For example, it is not possible to determine whether it is derived from animal fat, or whether gelatin is derived from an animal or a plant. The main complication of the issue is that these emulsifiers are labeled with the English letter “E” followed by a number from the longest to the shortest. These substances can only be divided into four main parts.

I. Coloring substances from E100 to E199.

II. Preservatives from E200 to E299.

III. Antioxidants from E300 to E399.

IV. Emulsifiers and stabilizers from E400 to E499.

Rulings related to the production of medicines

Introduction by Dr. Abdulfattah Mahmoud Idris, Head of the Department of Coordination of Fiqh Issues at the Faculty of Law and Sharia at Al-Azhar University

As in other sectors, substances that are forbidden by Sharia have entered Muslim countries in the pharmaceutical industry. These substances do not completely lose their properties during the production process, but are only mixed with the products being produced. Although they lose their appearance, they retain their properties and substances. However, the ruling called istihala in Sharia refers to the transformation of a substance from impurity to purity and from haram to halal.

Even on this issue, the views of the scholars differ. The ruling on the production of these medicines is directly related to the consumption in the treatment. All the jurists agreed on the haraam nature of some pharmaceutical products, as there is no need for them if there is a halal substitute that can replace them in the treatment

There was a difference of opinion regarding the ruling on consuming them when there is a need and no other permissible medicines are available for treatment. Among these opinions, the opinion that states that consumption is permissible in such cases when all the conditions of necessity are met is stronger. Based on this, it is not permissible to produce medicinal products that are haram and contain impurities when halal medicines are available for treatment. However, when there is a need to consume these haram products and all the conditions are met, according to the rule that "it is measured by the amount of the necessities," it is certainly permissible to produce these haram products in an amount that fills the need.

Today, it is no secret that it is possible to produce halal products that can replace these haram and najasat products. There are enough halal products that can replace products that are haram or najasat mixed, and pharmaceutical experts have actually discovered a number of halal products that can replace products that are haram or najasat mixed.

Of course, today, modern science and technology, as in every field, have achieved great achievements and inventions in the field of medicine. Especially in the field of medicine, many previously unknown sources and methods of treatment have been invented. Unfortunately, most of these discoveries are being made in non-Muslim countries, by people who are far from Islamic morality and laws. For this reason, Muslims, who depend on people who do not adhere to any Muslim culture in their inventions and production, are facing a number of problems in many issues today.

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