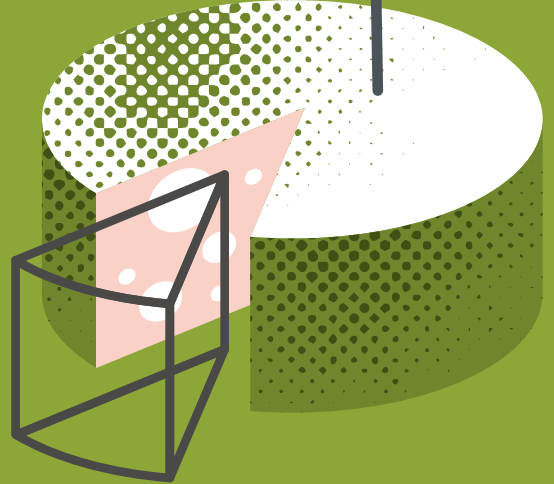


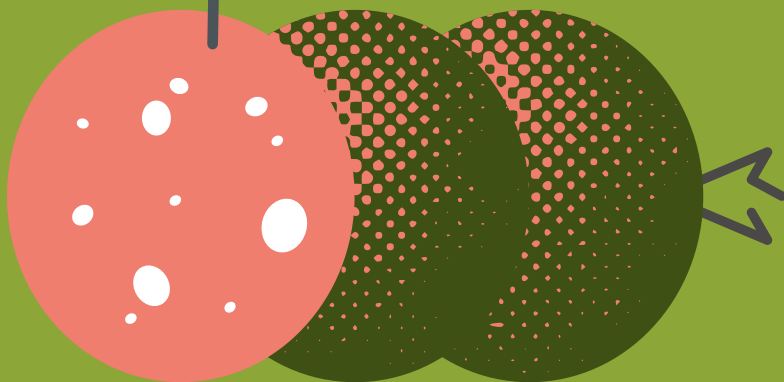
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E 473



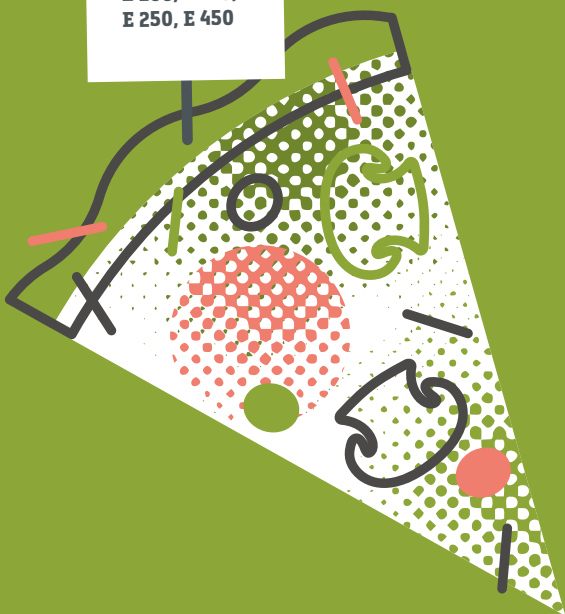
E 235, E 1105, E 160a,
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E 252, E 504, E 509



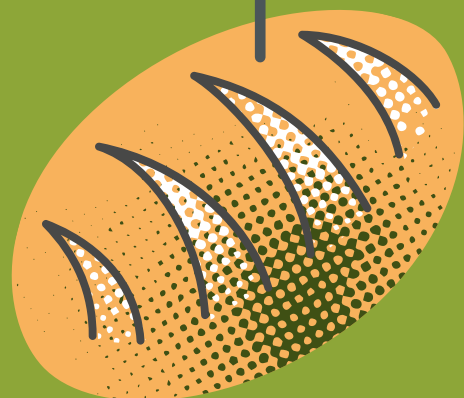
E 211, E 249,
E 120



E 200, E 120,
E 250, E 450



E 262, E 301,
E 326, E 472



Additives in food: harmless?



Food additives are used to colour, sweeten and shape food or prolong its shelf life. The substances are found in many industrially produced foods. Although only additives that pose no risk to our health may be used, they have a bad reputation.

“Chinese restaurant syndrome”: many have heard of it, but this phenomenon has not been scientifically proven. It describes complaints such as headaches and itching after a meal at a restaurant. Asian restaurants in particular are suspected by the public of serving dishes with too much of the flavour enhancer glutamate. This is supposed to trigger the symptoms – and is therefore controversial. Some companies now advertise getting by without glutamate. “Yeast extract is now often used instead. It naturally contains glutamic acid and other ingredients that have a taste-enhancing effect,” says food toxicologist Dr. Rainer Gürtler, who assesses the safety of food ingredients at the BfR.

Approved substances get E-numbers

Food additives give food certain properties. For example, they are intended to improve the taste and appearance of food or prolong its shelf life. In other words, they fulfil a technological function. This is how thickening agents make pudding firmer. Emulsifiers are used in margarine to mix ingredients containing water and oil, which would not be mixable without emulsifiers. Many additives are used for colouring or to make food production and processing or handling easier. Examples of this are baking agents in dough or foaming agents in cream. Other frequently used additives are stabilisers, gelling and thickening agents, as well as preservatives and sweeteners.



Whether foaming agents in cream or emulsifiers in margarine; food additives serve a technological function.

Flavourings and enzymes are not considered to be food additives and are regulated separately by law. Processing aids are also not considered to be food additives. They are used in processing raw materials, food or its ingredients, and may result in unintentional and technologically unavoidable residues in the end product, which must be harmless and have no technological effect on the end product. Processing aids include, for example, flocculants, filtration aids and release agents. Unlike food additives, flavourings and food enzymes, processing aids are not subject to authorisation. Therefore, food business operators are solely responsible for their use.

Food additives may only be used in the European Union if the intended use has been authorised. Health safety must be proven, as must the technological need of using the substance in the first place. Both are examined in the approval procedure, which the EU Commission carries out together with the member states. The safety of food additives is assessed by the European Food Safety Authority (EFSA) (see interview). If an additive is approved by the EU Commission, it is given a three-to-four-digit number: the E-number. The food categories – for example, meat products, bakery products or ice cream – for which the substance is authorised and the maximum quantities are also specified.

Scrutinising from a risk assessment perspective

Before new substances are included in Regulation (EC) No. 1333/2008, the German Federal Ministry of Food and Agriculture (BMEL) usually requests the BfR to scientifically examine the relevant draft of the EU Commission. As a federal institute, the BfR in Germany is responsible for assessing the health risks of food additives.

“We review and assess the draft regulation from a national point of view, in particular the question of how much of the substance would consumers in Germany ingest under the intended conditions of use,” says Gürtler. “We compare this amount with the acceptable daily intake.” This “ADI” value is the quantity of a substance that, according to current knowledge, can be ingested daily throughout one’s life without appreciable health risk. If the BfR comes to the conclusion that the ADI value would be exceeded, the BMEL informs the EU Commission.

The BfR also acts on its own initiative

In a different way, a consumer question on sucralose (E 955) triggered an assessment of a particular use of the sweetener. Scientists at the BfR found that if foods with sucralose, which may be contained in canned vegetables, for example, are heated to temperatures higher than 120 degrees Celsius in the oven, chlorinated organic compounds may be formed which could potentially be harmful, such as polychlorinated dibenzo-p-dioxins/dibenzofurans or chloropropanols. For a final risk assessment, additional data are still required. “Nevertheless, we made EFSA, which is currently re-assessing the approved sweeteners, aware of the issue,” recalls Gürtler. For the time being, the BfR recommends not baking, deep-frying or roasting any food with the sweetener.

Aspartame in focus

While many of the approximately 320 food additives are barely known to the public, individual substances are all the more the centre of attention. This also has an impact on research. Gürtler gives one example: “Aspartame is one of the most investigated additives at all.” The reason: the sweetener, found in coke or chewing gum, has long been supposed to be carcinogenic, which is why new studies have always been performed. According to the food toxicologist, none of them have confirmed the presumed harmful effect.

Are there good and bad additives?

For the expert, the safety of food additives is beyond dispute. Ultimately, only additives that do not, on the basis of the scientific evidence available, pose a safety concern at the proposed level of use may be authorised. And: “The EFSA assessments belong to those that have the highest standards in the world.” Gürtler suspects that doubts about food additives could be related to false assumptions. “Many believe that artificial substances are harmful to health and natural substances are healthy.” This is wrong because there are also natural poisons. “Whether a substance is natural or synthetic says nothing about its hazard potential,” says Gürtler. Citric acid, for example, can be produced by squeezing lemons. However, industry produces the substance as an additive with the number E 330 mainly with microbiological (fermentative) processes, because enormous quantities of it are required. “However, the manufacturing process is taken into account in the risk assessment of additives because it may provide indications of possible impurities.”

Nevertheless, anyone who wants to avoid food additives can do so. The use of additives is subject to labelling, meaning they must be indicated in the list of ingredients of packaged foods. There are also foods produced on an industrial scale that do not contain food additives, such as honey. And: untreated food is generally free of additives. ■

Frequently used additive groups

Preservatives impede the growth of bacteria or moulds, therefore extending the shelf life of food. Examples: sulphur dioxide in dried fruit, acetic acid in marinades.

Antioxidants delay the reaction of food ingredients, such as vitamins, with atmospheric oxygen. Examples: ascorbic acid in canned fruit, tocopherol in cooking oils.

Flavour enhancers enhance the flavour of processed foods. Examples: glutamate in seasonings.

Sweeteners replace sugar for sweetening. Examples: aspartame in sugar-free chewing gum, sucralose in sugar-reduced jams.

Colours improve the appearance of food. Examples: beta-carotene in margarine, curcumin in potato flakes.

Thickeners change the consistency of food and make aqueous solutions creamy or viscous. Examples: modified starch in pudding, pectin in sauces.

More information:

www.bfr.bund.de > A-Z-Index: Food additives

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