

## THE HAZARDOUS FOOD INCLUSIONS

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**Abstract:** During the PCP manufacturing process, chemical reactions occur that produce desirable and undesirable products. Some of these undesirable compounds can exhibit toxic effects.

**Keywords:** poly nuclear aromatic hydrocarbons, heterocyclic amines, acrylamides, choleric hazards, food product technology

Some chemical compounds can exhibit toxic effects. The amount of compounds formed is still unknown, but a large number of them have already been identified polynuclear aromatic hydrocarbons, heterocyclic amines, nitrosoamines, oxidized styrenes, lysinsolamines, etc. Acrylamide has recently been identified as a still unknown harmful component. Thanks to this discovery, it became clear that other toxicological substances, like still unknown compounds, are probably formed during food production [1,2]. In this article, we intend to take the most detailed look at only three compounds or classes of compounds.

Polyaromatic hydrocarbons.

Heterocyclic amines

Acrylamides.

Results and their discussions

Polyaromatic hydrocarbons (PAHs) make up a large and complex group of substances whose structure consists of two or more condensed benzene rings. Classification can be carried out according to the number of benzene rings in the molecule. If the number of benzene rings exceeds 4, then the compound is classified as a heavy fraction and the rest as a light fraction. These compounds are formed as a result of pyrolysis of organic material. Consequently, it will be possible to identify many sources of contamination, including industrial or geochemical activities. In this regard, it should be noted that PAHs also tend to bioaccumulate, especially those compounds included in the heavy fraction. In addition to harmful substances from the environment, they can also form on the food product itself. For example, due to heating (grilling), fumigation or drying process.

Apart from grilling and accurate PP, a great contribution to human exposure comes from oils, vegetables and fruits. In vegetable oils, the deodorization process can remove a slight fraction. If heavy fraction should also be removed, active carbon treatment should be used.

Heterocyclic amines.

Soon after a rapid sample was developed to determine mutagenic activity, it became clear that under normal heat treatment conditions, mutagenic compounds are formed in most PCPs rich in animal proteins. Mutagenic properties could not be attributed to PAHs, but were identified as heterocyclic amines.

Subsequently, about 20 different mutagenic heterocyclic amines were identified in a number of model and real food systems. It turned out that some of these compounds are carcinogenic in long-term studies of animals, as well as genotoxic in DNA replication tests. Two compounds were most active: 2-amino-3,8-dimethylimidazole [4,5]. Quinoxaline (abbreviated as MeIQx), which is imidazoquinoline (IQ compound), and 2-amino-1-methyl-6-imidazole [4,5,6] pyridine (abbreviated as PhIP), which is imidazoquinoxaline [6-11] pyridine (abbreviated PhIP), which is imidazoquinoxaline [2]. In general, PhIP is formed in greater quantities than MeIQx, usually, the maximum amount is 480 ng/g and 50 ng/g, respectively.

A complex combination of different chemical reactions can induce the formation of such heterocyclic amines in boiled PP. It is commonly assumed that creatine and creatinine play a central role in the formation of IQ

compounds. It is assumed that phenylalanine and creatinine are important precursors for PhIP. . In addition to phenylalanine, however, other amino acids can also be involved in this process. Reducing sugars, such as glucose, have also been shown to have a significant effect on the formation of such compounds, although they are not thought to be important for the formation of PhIP. In the absence of carboxyl compounds, it appears that heterocyclic compounds occur as a result of pyrolysis of amino acids.

Heat-treated meat and fish are important sources of heterocyclic amines, as they are very popular in countries where they are used in the production of gravy. They were first found in the shell (crust) of these products. Meat is usually more sensitive than fish. Cooked meat products usually contain a smaller amount than raw meat, probably due to the presence of various additives such as sulfates, nitrates or citric acid, which inhibit the formation of these products. Commercially produced meat products typically contain very small or undetectable amounts of heterocyclic amines, with some exceptions.

Acrylamides. A very large group of compounds related to heterocyclic amines, although their formation in PP has only recently been discovered, are acrylamides. Previously, it was assumed that the exposure of acrylamides to the human body is very insignificant, because acrylamide is often used as a monomer to produce polyacrylamide. This polymer finds technical applications and is also sometimes used as a packaging material. There is particular interest in the absorption of acrylamide with a daily diet due to its carcinogenicity, neurotoxicity, and reproductive toxicity.

Keywords: poly nuclear aromatic hydrocarbons, heterocyclic amines, acrylamides, cholemic hazards, food product technology.

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