

Know More About Cooking Oil



What is cooking oil?

Cooking oil is glycerol esters of fatty acids. It may be derived from animals or plants. Common types of cooking oil are peanut oil, corn oil and lard. They are used as a heat-transfer medium in frying to generate nicely cooked foods.



Changes associated with prolonged heating of cooking oil

In frying, cooking oil is heated to a temperature of 170-220 degrees Celsius. Upon heating, cooking oil may undergo chemical reactions, hydrolysis, oxidation and polymerisation. Degradation products such as free fatty acids, hydroperoxides and polymerised triglycerides may be formed. Besides, the viscosity of the cooking oil will increase; its colour will go darker and rancidity will also develop, giving rise to unpleasant flavour as a result of oxidation.

Hazards associated with prolonged heating of cooking oil

The amount of degradation products increases with the duration of heating of cooking oil at high temperatures. Some of these may be used to indicate the degree of degradation of cooking oil. The toxicity of these degradation products is of health concern. However, there is no definite evidence showing that the use of cooking oil with these degradation products will lead to cancers in humans.

It has also been reported that small amount of acrolein, a toxic substance to experimental animals, may be found in repeatedly-heated cooking oil. Its toxic effect in humans has yet to be determined.

Cooking oil may also have contaminants such as Polycyclic Aromatic Hydrocarbons (PAHs). These contaminants, if present in cooking oil, may be concentrated upon prolonged heating, or present in smoke from the heating process in some cases. Some PAHs have been found to be potentially carcinogenic to humans. Furthermore, certain types of plant oil such as peanut oil may be contaminated by naturally occurring aflatoxin, which are considered to be human carcinogens.

How can the hazards be controlled?

In food business, the hazards can be controlled through the adoption of Good Manufacturing Practice (GMP).

The purposes of GMP are

(a) to optimise the useful life of cooking oil;

(b) to maintain food acceptability and wholesomeness;

(c) to avoid extensive oxidative decomposition;

(d) to avoid the development of objectionable flavour; and

(e) to avoid the formation of polymeric compounds.



GMP includes the following points :

- choosing cooking oil of good quality and consistent stability;
- using properly designed equipment;
- selecting the lowest possible frying temperature;
- filtering cooking oil frequently to remove food particles;
- cleansing equipment frequently;
- replacing cooking oil as needed to maintain quality;
- providing adequate training to personnel; and
- testing cooking oil frequently throughout the frying process.



Moreover, the Food and Environmental Hygiene Department (FEHD) monitors the quality of cooking oil through its food surveillance programme. Inspectors will take samples of cooking oil for analysis to ensure they are suitable for cooking and safe for human consumption. The Public Health and Municipal Services Ordinance (Cap 132) stipulates that sale of food not fit for human consumption is an offence. Offenders shall be liable to a maximum fine of \$50,000 and an imprisonment of six months.

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