INTERNATIONAL MULTIDISCIPLINARY JOURNAL FOR RESEARCH & DEVELOPMENT
SJIF 2019: 5.222 2020: 5.552 2021: 5.637 2022:5.479 2023:6.563 2024: 7,805
eISSN :2394-6334 https://www.ijmrd.in/index.php/imjrd Volume 12, issue 07 (2025)

RESEARCH ON HARMFUL SUBSTANCES PERMITTED IN FATTY AND OIL PRODUCTS

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Abstract : Dietary fats are one of the essential food products for the human diet. First of all, fats are essential for humans It serves as a source of energy. Fats account for about one-third of the energy a person uses in their daily activities. Fats also participate in physiological processes in the human body.

Keywords: oil, food, Ochratoxin, Lead, Cadmium, Mercury, Benzopyrene and other polycyclic aromatic hydrocarbons.

Introduction. Controlling the levels of harmful substances in oil and fat products is important for ensuring food safety. The harmful substances that may be present in these products are usually residual pesticides, heavy metals, mycotoxins and other contaminants. Their permission done amount international and local standards based on is determined .
Oil - oil in products permission done harmful substances

1. **Heavy metals**

- **Lead (Pb)** : Lead amount food in products less in quantity permission done if too , far term consumption to do health for harmful to be possible . Usually permission done amount 0.1–0.5 mg / kg around is determined .

- **Cadmium (Cd)** : Oil - grease in products cadmium amount 0.05–0.2 mg / kg from not to exceed It is necessary because it is nervous . system and to the kidneys damage to deliver possible .

- **Mercury (Hg)** : Mercury oil - butter from 0.02–0.05 mg/kg in products not to exceed Mercury poisoning take arrival and in the body accumulation possible .

2. **Mycotoxins**

- **Aflatoxins** : Aflatoxins , especially aflatoxin B1, oily of plants seeds and in products preservation possible . Permission done quantity aflatoxin For B1 , in the range of 2–5 ppb (mg / kg) is determined because this substance the liver damage and cancer disease brought release possible .

- **Ochratoxin** : Ochratoxin amount less in quantity permission is being and his/her concentration from 5–10 ppb (mg / kg) not to exceed It is necessary , because it is a kidney and liver for danger gives birth .

3. **Pesticide remains**

- **Organophosphate pesticides** : Such pesticides oil - butter in products to be preserved permission given if also , amount minimum to be need , usually general amount 0.01–0.05 mg / kg between will be .

- **Organochlorine pesticides** : such as DDT organochlorine pesticides permission done at the borders to remain necessary , usually 0.01–0.1 mg / kg around , because they in the body accumulated , cancer , nerve system and reproductive to the system damage to deliver possible .

4. **Benzopyrene and other polycyclic aromatic hydrocarbons (PAH)**

- **Benzopyrene** : Oil - oil in products permission done amount typically between 2–10 ppb (mg/kg) These substances are to fry , to heat or smoke through enter arrival possible and carcinogenic is considered .

5. **Free fatty acids and peroxide number**

- **Free Fatty acids** : Usually oil - butter in products free fatty acids amount from 0.3% not to exceed need .

- **Peroxide Number** of oil products oxidation level measures . New oil - butter in products this indicator from 10 meq / kg not to exceed necessary .

Permission done quantities according to international standards

- **Codex Alimentarius** : This international codex food to safety wearable main requirements , including oil - grease in products permission done harmful substances amount defines .

- **Europe Union regulations** : EU Regulation (EC) No 1881/2006 according to , oil - oil in products harmful substances , including heavy metals , mycotoxins and pesticide remains for maximum permission done quantities is determined .

- **ISO 22000** and **HACCP** systems : This standards the danger management and harmful substances amount designated on checks storage for help gives .

Above requirements oil - butter products safety provide and consumers health protection to do for This is intended . harmful substances amount designated at the level hold stand product working issuers main is the task .

Oils used as food products in our daily lives are divided into groups such as vegetable oils, animal oils, marine animal and fish oils, and margarines. Since these oils are an important component of the human diet, they must be of high quality and safe for human life. Therefore, conducting quality expertise of oils is of great practical importance. Below is information on conducting quality expertise of these oils, which are necessary for human life.

When used for their intended purpose, edible oils and fats released into circulation must not harm human life and health during the shelf life of edible oils and fats and during the shelf life of non-edible oils and fats.

Oil and grease products must comply with the mandatory sanitary rules, norms and hygienic standards established by the Technical Regulations during their production, packaging, storage, transportation, circulation and disposal (processing).

The quality indicators of vegetable oils are determined using organoleptic, physical and chemical methods.

The organoleptic method determines the taste, smell, color, clarity, and condition of oils.

The smell and taste of oils are one of the main indicators of their quality. The substances that determine the taste and smell of oils are found in small quantities in oils and are mainly a complex mixture of organic compounds. These include hydrocarbons, terpenes, volatile fatty acids, aldehydes, ketones, alcohols, complex esters and natural essential oils.

The smell and taste of vegetable oils largely depend on the type of oilseeds, the quality of the raw materials (oils obtained from seeds with any defects will have a bad taste and smell), the method of oil production, the technological process regimes, the degree of purification, etc.

Table 3.1

Permissible levels of toxic elements in edible oil and fat products

Products name	**Indicators**	**Permission done amount from mg/kg many it's not**
Plant oils (all types), plant of oils factions .	Lead	0.1
		0.2 (peanuts) oil for)
	Mercury	0.1
	Cadmium	0.05
	Mercury	0.03
	Iron	1.5 refined oils for
		5.0 unrefined oil , refined and unrefined oils mixture for
	Copper	0.1 refined oils for
		0.4 unrefined oils for
Refined deodorized hydrogenated oils ; refined deodorized peretherified oils ; special to apply intended fats (bread, confectionery products , baking for oils and others).	Lead	0.1
	Mercury	0.1
	Cadmium	0.05
	Mercury	0.05
	Nickel	0.7 hydrogenated refined and deodorized oils (fats) and in the composition hydrogenated oil and oils there is products for
Margarines .	Lead	0.1
	Mercury	0.1
	Cadmium	0.05
	Mercury	0.05
	Nickel	0.7 in the composition hydrogenated oils and oils there is products
	Iron	1.5 (cocoa) products added

		from margarines except)
	Copper	0.1 (cocoa) products added from margarines except)
Milk of oil instead clicker products ; Cocoa oil equivalent ; SOS- type cocoa oil improvers ; POP- type cocoa oil instead clicker products ; Nolaurin of the type untempered cocoa oil instead pressers ; Laurin of the type untempered cocoa oil instead clickers .	Lead	0.1
	Mercury	0.1
	Cadmium	0.05
	Mercury	0.05
	Nickel	0.7 in the composition hydrogenated oils and oils there is products
Mayonnaise ; with mayonnaise sauces ; plant oils based on prepared sauces ; plant oils based on prepared cream	Lead	0.3
	Mercury	0.1
	Cadmium	0.05
	Mercury	0.05
Vegetable oil spreads ; vegetable -butter spreads ; plant oily melted mixed mixtures ; with vegetable butter melted mixed mixtures .	Lead	0.1
		0.3 cocoa product added types for
	Mercury	0.1
	Cadmium	0.03 vegetable-butter products for
		0.05 vegetable oil products for
		0.2 cocoa product added types for
	Mercury	0.03 vegetable-butter products for
		0.05 vegetable oil products for
		0.2 cocoa product added types for
	Nickel	0.7 in the composition hydrogenated oils and oils there is products

	Iron	1.5 (cocoa) product added spreads and melted mixed from mixtures except)
	Copper	0.1 vegetable oil types for (cocoa products added of the types except)
		0.4 vegetable-butter types for (cocoa products added of the types except)
Distilled glycerin .	Iron	2.0
	Lead	5.0
	Mercury	0.3

Unrefined oils have a distinctive smell and taste. These smells and tastes are clearly noticeable in oils.

Refined oils have a less noticeable smell and taste, while deodorized oils have no smell or taste at all. The smell and taste of oils can also change over time. The smell and taste of oils can be used to determine where they come from, the degree of refinement, whether they are adulterated, and sometimes whether they contain foreign substances.

The color of oils depends on the types and quantities of coloring substances in their composition. The color of unrefined oils is unique, while the color of refined oils varies depending on the degree of purification and purification methods. It is known that when we store oils for a long time, their yellow color disappears and they turn white. This is due to the decomposition of carotenoid substances that give the oils their yellow color under the influence of oxygen in the air.

The clarity of oils is also one of the main indicators that determine their quality. Clear oils are those that are free from visible sediments when stored at 200C. If the oils are not properly purified from phosphotides and seed coats, waxes, and kernel fragments remain in the oils for some reason, sediment and sediment will form during storage of these oils. The sediment and sediment in the oils reduce their marketable properties.

Conclusion As we have said above, for long-term storage of vegetable oils in large volumes, tank-tanks are used. These containers should be coated with paints and enamels that reflect sunlight. To ensure long-term storage of oils, it is recommended that the temperature not exceed 8-10 °C and the relative humidity of the air not exceed 75%. Painting the tanks with these paints maintains the same temperature, which ensures long-term storage of oils. When storing oils in large-volume tanks, the oils should be filled into the tanks, since the oxygen contained in the air in the space dissolves in the oil and subsequently undergoes an oxidation reaction, which causes a decrease in the quality of the oil.

As can be seen from the above, when storing oils, it is necessary to prevent their oxidation first of all. The guaranteed shelf life of oils under the specified conditions is accepted as 1 year. Bottled oil should be stored in closed dark rooms with a temperature not exceeding 18 °C .

Under such conditions, the guaranteed shelf life of refined deodorized sunflower and corn oils from the date of bottling is 4 months, for refined non-deodorized cottonseed oil it is 6 months, and for deodorized soybean oil it is 1.5 months.

List of used literature

1. Law of the Republic of Uzbekistan "On Standardization". December 28, 1993.
2. Law of the Republic of Uzbekistan “On Metrology”. December 28, 1993.
3. Law of the Republic of Uzbekistan “On Certification of Products and Services”. December 28, 1993.
4. Decree of the President of the Republic of Uzbekistan Shavkat Miromonovich Mirziyoyev dated February 7, 2017 No. PF-4947 On the Strategy of Actions for the Further Development of the Republic of Uzbekistan.
5. Resolution of the President of the Republic of Uzbekistan No. PQ-2935 dated April 28, 2017 "On measures to improve the activities of the Uzbekistan Agency for Standardization, Metrology and Certification".
6. Uz DSt ISO 22000:2009 Food - requirements for all organizations involved in the production and consumption of food products.
7. Lupova E.I, Mirakova I.S. Pokaseteli falsifiatsii i identitazii rastitelnykh masel // Nauchno-prakticheskie aspekti teknologii vozdelyvaniya i pererabotki maslichnykh kultur: mat-ly Mejdunar. nauch.-prakt. conf. Ryazan, 2013. S. 206-208.
8. Khalipsky A.N., Vedrov N.G., Ryabtsev A.A. Zhirnokislotnyi sostav rastitelnogo masla sortov yarovogo raspa v usloviyakh Krasnoyarskoy lesostepi // Vestnik Kras-GAU. 2015. No. 3 (102). S. 90-94.
9. shcherbakov V.G., Lobanov V.G. Biochemistry and tovarovedenie maslichnogo srya. 5-e izd. M.: KolosS, 2003. 360 p.
10. F. P. Nosovitskaya, N. I. Smirnova, S. A. Zhitskova, E. A. Nikitin Ekspres-control pokazateley kachestva i bezopasnosti v rastitelnyx maslax Journal "Masla i jiry"
11. Besedovala Svetlana Gnoevets Kachestvo i bezopasnost transportirovki rastitelnyx masel. https://www.apk-inform.com/ru/exclusive/topic/1023856
12. Tsatsina Marina Nikolaevna Kachestvo i bezopasnost rastitelnogo masla, postavlyaemogo dlya nujd uis. Nauka Molodykh – Budushchee Rossii Sbornik nauchnykh statey 4-y Mejdunarodnoy nauchnoy conference perspectivnykh razrabotok molodykh uchenykh. V 8-mi tomax. Otvetstvennyy redaktor A.A. Gorokhov. 2019