

Peanut Oil

1 Nonproprietary Names

BP: Arachis oil
JP: Peanut oil
PhEur: Arachidis oleum
USPNF: Peanut oil

2 Synonyms

Aextreff CT; earthnut oil; groundnut oil; katchung oil; *Lipex 101*; nut oil.

3 Chemical Name and CAS Registry Number

Peanut oil [8002-03-7]

4 Empirical Formula Molecular Weight

A typical analysis of refined peanut oil indicates the composition of the acids present as glycerides to be: arachidic acid 2.4%; behenic acid 3.1%; palmitic acid 8.3%; stearic acid 3.1%; lignoceric acid 1.1%; linoleic acid 26.0%, and oleic acid 56.0%.⁽¹⁾

5 Structural Formula

See Section 4.

6 Functional Category

Oleaginous vehicle; solvent.

7 Applications in Pharmaceutical Formulation or Technology

Peanut oil is used as an excipient in pharmaceutical formulations primarily as a solvent for sustained-release intramuscular injections. It is also used as a vehicle for topical preparations and as a solvent for vitamins and hormones. Most recently it has been part of sustained-release bead formulations,⁽²⁾ nasal drug delivery systems,⁽³⁾ and controlled-release injectables.⁽⁴⁾

Therapeutically, emulsions containing peanut oil have been used in nutrition regimens, in enemas as a fecal softener, and in otic drops to soften ear wax. It is also administered orally, usually with sorbitol, as a gall bladder evacuant prior to cholecystography.

Peanut oil is also widely used as an edible oil.

8 Description

Peanut oil is a colorless or pale yellow-colored liquid that has a faint nutty odor and a bland, nutty taste. At about 3°C it becomes cloudy, and at lower temperatures it partially solidifies.

9 Pharmacopeial Specifications

See Table I.

Table I: Pharmacopeial specifications for peanut oil.

Test	JP 2001	PhEur 2002	USPNF 20
Identification	+	—	+
Solidification range	22–33°C	~2°C	26–33°C
Acid value	≤0.2	≤0.5	—
Peroxide value	—	≤5.0	—
Unsaponifiable matter	≤1.5%	≤1.0%	≤1.5%
Specific gravity	0.909–0.916	0.915	0.912–0.920
Alkaline impurities	—	+	—
Cottonseed oil	—	—	+
Rancidity	—	—	+
Iodine value	84–103	—	84–100
Saponification value	188–196	—	185–195
Refractive index at 40°C	—	—	1.462–4.464
Heavy metals	—	—	≤0.001%
Organic volatile impurities	—	—	+
Water	—	≤0.3%	—
Composition of fatty acids	—	+	+
Saturated fatty acids	—	≤0.4%	—
≤C ₁₄	—	—	—
Palmitic acid	—	7.0–16.0%	—
Stearic acid	—	1.3–6.5%	—
Oleic acid	—	35.0–72.0%	—
Linoleic acid	—	13.0–43.0%	—
Linolenic acid	—	≤0.6%	—
Lignoceric acid	—	0.5–3.0%	—
Arachidic acid	—	0.5–3.0%	—
Eicosenoic acid	—	≤0.5–2.1%	—
Behenic acid	—	1.0–5.0%	—
Erucic acid	—	≤0.5%	—

10 Typical Properties

Autoignition temperature: 443°C

Density: 0.915 g/cm³ at 25°C

Flash point: 283°C

Freezing point: –5°C

Hydroxyl value: 2.5–9.5

Interfacial tension: 19.9 mN/m at 25°C⁽⁵⁾

Refractive index: $n_D^{25} = 1.466–1.470$

Solubility: very slightly soluble in ethanol (95%); soluble in benzene, carbon tetrachloride, and oils; miscible with carbon disulfide, chloroform, ether, and hexane.

Surface tension: 37.5 mN/m at 25°C⁽⁵⁾

Viscosity (dynamic): 35.2 mPa s (35.2 cP) at 37°C⁽⁵⁾

Viscosity (kinematic): 39.0 mm²/s (39.0 cSt) at 37°C⁽⁵⁾

11 Stability and Storage Conditions

Peanut oil is an essentially stable material.⁽⁶⁾ However on exposure to air it can slowly thicken and may become rancid. Solidified peanut oil should be completely melted and mixed before use. Peanut oil may be sterilized by aseptic filtration or by dry heat, for example, by maintaining it at 150°C for 1 hour.⁽⁷⁾

Peanut oil should be stored in a well-filled, airtight, light-resistant container, at a temperature not exceeding 40°C. Material intended for use in parenteral dosage forms should be stored in a glass container.

12 Incompatibilities

Peanut oil may be saponified by alkali hydroxides.

13 Method of Manufacture

Refined peanut oil is obtained from the seeds of *Arachis hypogaea* Linné (Fam. Leguminosae). The seeds are separated from the peanut shells and are expressed in a powerful hydraulic press. The crude oil has a light yellow to light brown color, and is then purified to make it suitable for food or pharmaceutical purposes. A suitable antioxidant may be added.

14 Safety

Peanut oil is mildly laxative at a dosage of 15–60 mL orally or of 100–500 mL rectally as an enema.

Adverse reactions to peanut oil in foods and pharmaceutical formulations have been reported extensively.^(8–18) These include severe allergic skin rashes^(8,9) and anaphylactic shock following consumption of peanut butter.⁽¹⁰⁾ Some workers have suggested that the use in infancy of preparations containing peanut oil, including infant formula and topical preparations, is associated with sensitization to peanut, with a subsequent risk of hypersensitivity reactions, and that such products should therefore be avoided or banned.^(8–12) However, the role of pharmaceutical preparations in later development of hypersensitivity is disputed since such preparations contain highly refined peanut oil that should not contain the proteins associated with allergic reactions in susceptible individuals.^(13–15)

Peanut oil is harmful if administered intravenously and it should not be used in such formulations.⁽¹⁶⁾

See also Section 18.

15 Handling Precautions

Observe normal handling precautions appropriate to the circumstances and quantity of material handled. Spillages of peanut oil are slippery and should be covered with an inert absorbent material prior to disposal.

16 Regulatory Status

Included in the FDA Inactive Ingredients Guide (IM injections, topical preparations, oral capsules, and vaginal emulsions). Included in parenteral and nonparenteral medicines licensed in the UK.

17 Related Substances

Canola oil; corn oil; cottonseed oil; sesame oil; soybean oil; sunflower oil.

18 Comments

As a result of the potentially fatal reactions noted in Section 14, certain food products are now commonly labeled with a statement that they contain peanut oil.

19 Specific References

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20 General References

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21 Author

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22 Date of Revision

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