

- Gissen P, et al. Ophthalmic follow-up of patients with tyrosinaemia type I on NTBC. *J Inher Metab Dis* 2003; **26**: 13–16.
- Joshi SN, Venugopalan P. Experience with NTBC therapy in hereditary tyrosinaemia type I: an alternative to liver transplantation. *Ann Trop Paediatr* 2004; **24**: 259–65.
- Suwanarat P, et al. Use of nitisinone in patients with alkaptonuria. *Metabolism* 2005; **54**: 719–28.
- McKiernan PJ. Nitisinone in the treatment of hereditary tyrosinaemia type I. *Drugs* 2006; **66**: 743–50.

Preparations

Proprietary Preparations (details are given in Part 3)

Belg.: Orfadin; **Cz.:** Orfadin; **Denm.:** Orfadin; **Fin.:** Orfadin; **Fr.:** Orfadin; **Ger.:** Orfadin; **Neth.:** Orfadin; **Port.:** Orfadin; **Spain:** Orfadin; **Swed.:** Orfadin; **USA:** Orfadin.

Nitric Acid

Acide nitrique; Acidum nitricum; Acidum Nitricum 70%; Aqua Fortis; Azotic Acid; Kwas azotowy; Kyselina dusičná 70%; Nit. Acid; Nitratu rüggstis; Nítrico, ácido; Salétramsva; Salpetersäure; Salpetersyra; Typpihappo.

HNO₃ = 63.01.

CAS — 7697-37-2.



Pharmacopoeias. In *Eur.* (see p.vii) (68 to 70%). Also in *USNF* (69 to 71%).

Ph. Eur. 6.2 (Nitric Acid). A clear, colourless to almost colourless liquid. Miscible with water. It contains 68.0 to 70.0% w/w of HNO₃. Protect from light.

USNF 26 (Nitric Acid). A highly corrosive fuming liquid, having a characteristic, highly irritating odour. It contains 69.0 to 71.0% w/w of HNO₃. Store in airtight containers.

Adverse Effects and Treatment

As for Hydrochloric Acid, p.2322.

There may be methaemoglobinaemia. Nitric acid stains the skin yellow.

Effects on the respiratory system. Respiratory failure due to pulmonary oedema occurred in a 56-year-old man after inhaling nitric acid which he had used as a metal cleaner.¹ The man died despite extensive ventilatory support.

- Bur A, et al. Fatal pulmonary edema after nitric acid inhalation. *Resuscitation* 1997; **35**: 33–6.

Uses and Administration

Nitric acid has a powerful corrosive action and has been used to remove warts (p.1584), but it should be applied with caution, and less corrosive substances are available. It has also been used for the removal of tattoos.

Preparations

Proprietary Preparations (details are given in Part 3)

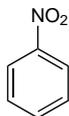
Multi-ingredient: **Cz.:** Solcogyn†; **Ger.:** Solco-Derman; **Hong Kong:** Solcoderm; **Malaysia:** Solcoderm†; **Pol.:** Solcogyn; **Rus.:** Solcoderm (Солкодерм); **Solcovagin** (Солковагин); **Switz.:** Solcoderm; Solcogyn.

Nitrobenzene

Acete de mirbana; Nitrobenzeno; Nitrobenzen; Nitrobenzol; Oil of Mirbane.

C₆H₅NO₂ = 123.1.

CAS — 98-95-3.



Adverse Effects

Nitrobenzene is highly toxic and the ingestion of 1 g may be fatal. Poisoning may occur from absorption through the skin, by inhalation, or by ingestion. Toxic effects are usually delayed for several hours and may include nausea, prostration, burning headache, methaemoglobinaemia with cyanosis, haemolytic anaemia, vomiting (with characteristic odour), convulsions, and coma, ending in death after a few hours.

Treatment of Adverse Effects

Although the benefit of gastric decontamination following ingestion of nitrobenzene is uncertain, gastric lavage or activated charcoal may be considered if given within 1 hour of ingestion. Methaemoglobinaemia may be treated with methylnthionium chloride. Oxygen should be given if cyanosis is severe.

The symbol † denotes a preparation no longer actively marketed

If the skin or eyes are splashed with nitrobenzene, contaminated clothing should be removed immediately and the affected areas washed thoroughly with water at room temperature for at least 15 minutes.

Uses

Nitrobenzene is used in the manufacture of aniline, as a preservative in polishes, and in perfumery and soaps.

Nix-0699

Hemoxin; Nicosan; Niprisan.

Profile

Nix-0699 is an extract of the leaf of *Sorghum bicolor* (sorghum), the stem of *Pterocarpus osun* (camwood), the seed of *Piper guineense* (Ashanti or Benin pepper), and the flower of *Syzygium aromaticum*; *Eugenia caryophyllus* (clove). It is being investigated in the treatment of sickle-cell disease.

Reviews

- Cordeiro NJV, Oniyangi O. Phytomedicines (medicines derived from plants) for sickle cell disease. Available in The Cochrane Database of Systematic Reviews; Issue 3. Chichester: John Wiley; 2004 (accessed 19/08/08).

Nucleic Acid

Acide Zymonucleique; Acidum Nucleicum; Nucleico, ácido; Nucleic Acid.

Нуклеиновая Кислота

Profile

Nucleic acids, which are present in all cellular organisms and viruses, are composed of high molecular weight polynucleotides. A nucleotide is a phosphate ester of a nucleoside, which is made up of either a purine or pyrimidine nitrogenous base attached to a pentose sugar by an *N*-glycosidic linkage. Diester phosphate linkages between the sugar moieties produce a polynucleotide strand. Nucleic acids are of two types: deoxyribonucleic acid (DNA) (p.2293) and ribonucleic acid (RNA) (p.2379). Synthetic or recombinant nucleic acids are used in gene therapy (p.2310). Since the administration of nucleic acid gives rise to a marked temporary leucocytosis (usually preceded by a short period of leucopenia) it was formerly given in the treatment of a variety of bacterial infections in the hope of enhancing the natural defence mechanisms. Its therapeutic value, however, has never been established.

Preparations

Proprietary Preparations (details are given in Part 3)

India: Nulip.

Nutmeg

Muscade; Myristica; Noz Moscada; Nuez muscada; Nux Moschata.

Description. Nutmeg consists of the dried kernels of the seeds of *Myristica fragrans* (Myristicaceae), containing not less than 5% v/w of volatile oil; the powdered drug contains not less than 4% v/w, Mace (see Mace Oil, p.2336) is the dried arillus of the seed of *M. fragrans*.

Pharmacopoeias. In *Chin.*

Adverse Effects

Nutmeg, taken in large doses, may cause nausea and vomiting, flushing, dry mouth, tachycardia, stimulation of the CNS possibly with epileptiform convulsions, miosis or occasionally mydriasis, euphoria, and hallucinations. Myristicin and elimicin are thought to be the constituents responsible for the psychotic effects of nutmeg, possibly because of metabolism to amphetamine-like compounds.

◇ Some references to the adverse effects of nutmeg.

- Panayotopoulos DJ, Chisholm DD. Hallucinogenic effect of nutmeg. *BMJ* 1970; **1**: 754.
- Venables GS, et al. Nutmeg poisoning. *BMJ* 1976; **1**: 96.
- Dietz WH, Stuart MJ. Nutmeg and prostaglandins. *N Engl J Med* 1976; **294**: 503.
- Faguet RA, Rowland KF. "Spice cabinet" intoxication. *Am J Psychiatry* 1978; **135**: 860–1.
- Abernethy MK, Becker LB. Acute nutmeg intoxication. *Am J Emerg Med* 1992; **10**: 429–30.
- Brenner N, et al. Chronic nutmeg psychosis. *J R Soc Med* 1993; **86**: 179–80.
- Quin GL, et al. Nutmeg intoxication. *J Accid Emerg Med* 1998; **15**: 287–8.
- Sangalli BC, Chiang W. Toxicology of nutmeg abuse. *J Toxicol Clin Toxicol* 2000; **38**: 671–8.
- Stein U, et al. Nutmeg (myristicin) poisoning—report on a fatal case and a series of cases recorded by a poison information centre. *Forensic Sci Int* 2001; **118**: 87–90.

Uses and Administration

Nutmeg is the source of nutmeg oil (below). It is aromatic and carminative and is used as a flavour. Nutmeg has been reported to inhibit prostaglandin synthesis.

Homoeopathy. Nutmeg has been used in homoeopathic medicines under the following names: *Myristica fragrans*; *Nux moschata*; *Nux. mos.*

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: **Austria:** Maniazeller; **Braz.:** Paratonico; **Cz.:** Dr Theiss Schwedenbitter; Klosterfrau Melisana; Naturland Grosser Swedenbitter; Original Schwedenbitter; **Ger.:** Doppelherz Melissengeist; Melissengeist; **Pol.:** Melisana Klosterfrau; **Rus.:** Doppelherz Melissa (Доппельгерц Мелисса); Fitovit (Фитовит); Himcolin (Химколин); Original Grosser Bitter Balsam (Оригинальный Большой Бальзам Биттнера); **S.Afr.:** Entressdruppels HM; Melissengeist; Rooilavent; Spiritus Contra Tussim Drops; **Spain:** Agua del Carmen; **Switz.:** Alcoolat de Melisse†; **UK:** Melissa Comp.

Nutmeg Oil

Ätherisches Muskatöl; Esencia de Nuez Moscada; Essence de Muscade; Essência de Moscada; Muškátovníková silice; Muskaty etenis alejus; Muskotolja; Muskottölj; Myristica Oil; Myristicae Etheroleum; Myristicae fragrantis aetheroleum; Noix muscade, huile essentielle de; Nuez muscada, aceite esencial de; Oleum Myristicae; Szerecsendióolaj.

Pharmacopoeias. In *Eur.* (see p.vii).

Ph. Eur. 6.2 (Nutmeg Oil). The oil obtained by steam distillation of the dried and crushed kernels of *Myristica fragrans*. A colourless to pale yellow liquid with a spicy odour. Store in well-filled, airtight containers. Protect from light and heat.

Profile

Nutmeg oil is aromatic and carminative and is used as a flavour. Nutmeg oil and expressed nutmeg oil, a solid fat, are rubefacient. Nutmeg oil is also used in aromatherapy.

Preparations

BP 2008: Aromatic Ammonia Spirit.

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: **Austral.:** Vicks Vaporub; **Austria:** Emser Nasensalbe; Expectal-Balsam; Pe-Ce; Wick Vaporub; **Belg.:** Vicks Vaporub; **Braz.:** Wick Vaporub; **Canada:** Vaporizing Ointment; **Chile:** Agua Melisa Carminativa; **Fr.:** Vegebom; Vicks Vaporub; **Ger.:** Emser Nasensalbe N†; esto-gast; **NZ:** Vicks Vaporub; **Pol.:** Argol Essenza Balsamica; Argol Grip; Argol Rheuma; Wick Vaporub; **Rus.:** Carmolis (Кармолис); Carmolis Fluid (Кармолис Жидкость); Doktor Mom (Доктор Мом); **S.Afr.:** Balmem Vita GEL; Balmem Vita ROO; Balmem Vita WIT; Enterodine; Stuidruppels; Vicks Vaporub; **Swed.:** Vicks Vaporub†; **Switz.:** Carmol; Carmol Plus†; Eucapinol; Frixo-Dragon Vert†; Vicks Vaporub N; **Thai:** Tiffanyrub†; **Turk.:** Vicks Vaporub; **UK:** Dragon Balm; No-Sor Vapour Rub; Nowax; **USA:** Vicks Vaporub.

Nux Vomica

Brechness; Noce Vomica; Noix Vomique; Nuez vómica; Strychni Semen.

CAS — 357-57-3 (anhydrous brucine).

Pharmacopoeias. In *Chin.* and *Jpn.*

Profile

Nux vomica consists of the dried ripe seeds of *Strychnos nuxvomica* (Loganiaceae). It has the actions of strychnine (see p.2393). As well as containing strychnine, nux vomica contains brucine which has similar properties.

Nux vomica is used in herbal medicine for a wide variety of disorders including those of digestion or debility.

Homoeopathy. Nux vomica has been used in homoeopathic medicines under the following names: *Nux vom.*; *Strychnos nuxvomica*.

The dried ripe seeds of *Strychnos ignatii* have been used in homoeopathic medicines under the following names: *Iamara*; *Ignatia*; *Ignatia amara*; *Ign.*

Preparations

Proprietary Preparations (details are given in Part 3)

Braz.: Cessagripe†.

Multi-ingredient: **Braz.:** Estomafitino†; Gotas Digestivas; Kola Fosfatada Soel†; **Chile:** Fenokomp 39; Fenoflataleina Compuesta†; Homeofortin III†; **Ital.:** Lassatina†; **Mex.:** Bigenol; **Philipp.:** BSI Medicated Spray; **Rus.:** Tentex (Тентекс); **Spain:** Alofedina; **Switz.:** Padma-Lax; Padmed Laxan; **Thai:** Flatulence.

Oak Bark

Ažulj žievė; Chêne, écorce de; Common Oak; Corteza de roble; Dubová kůra; Durmast Oak; Écorce de Chêne; Eichenrinde; Ekbar; Kora dębowa; Quercus; Quercus cortex; Tammenkuori; Tölgyfakéreg.

Pharmacopoeias. In *Eur.* (see p.vii).

Ph. Eur. 6.2 (Oak Bark). The cut and dried bark from the fresh young branches of *Quercus robur*, *Q. petraea*, and *Q. pubescens*. It contains a minimum of 3.0% of tannins, expressed as pyrogallol, calculated with reference to the dried drug.

Profile

Oak bark contains quercitannic acid. It has astringent properties and is used in some herbal preparations. It was formerly used for haemorrhoids and as a gargle.

Homoeopathy. Oak bark has been used in homoeopathic medicines under the following names: *Quercus*.