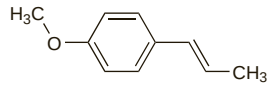
Anethole

Anethol; Anetol; *p*-Propenylanisole. (*E*)-1-Methoxy-4-(prop-1-enyl)benzene.

$C_{10}H_{12}O$ = 148.2.

CAS — 104-46-1; 4180-23-8 (E isomer).



NOTE. Distinguish from Anethole Trithione (below).

Pharmacopoeias. In *Ger.* Also in *USNF.*

USNF 26 (Anethole). Obtained from anise oil or other sources or prepared synthetically. At or above 23° anethole is a colourless or faintly yellow liquid with a sweet taste and the aromatic odour of aniseed. Very slightly soluble in water; soluble 1 in 2 by volume of alcohol; readily miscible with chloroform and with ether. Store in airtight containers. Protect from light.

Profile

Anethole has similar properties to those of anise oil (below). It is also included in mixed terpene preparations used in urinary-tract disorders.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austria:*** Rowatinex; ***Canad.:*** Beech Nut Cough Drops†; Bentasil Licorice with Echinacea†; Bentasil†; Bronco Asmol; ***Chile:*** Rowatinex; ***Cz.:*** Rowatinex; ***Ger.:*** Rowatinex; ***Hong Kong:*** Neo-Rowatinex; Rowatinex; ***Hung.:*** Rowatinex; ***Indon.:*** Listerine Coolmint; ***Irl.:*** Rowatinex; ***Israel:*** Rowatinex; ***Malaysia:*** Rowatinex; ***Philipp.:*** Listerine Coolmint; Rowatinex; ***Pol.:*** Rowatinex; ***Spain:*** Pulmofasa; Rowanefrin; Vicks Formula 44†; ***Switz.:*** GU Eau†; Neo-Angin sans sucre; Pectocalmine Junior N; ***Thai.:*** Rowatinex; ***Venez.:*** Rowatinex.

Anethole Trithione

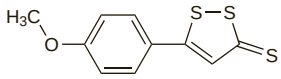
Anethole Dithiolthione; Anetol tritiona; SKF-1717; Trithioparamethoxyphenylpropene. 5-(4-Methoxyphenyl)-3*H*-1,2-dithiole-3-thione.

$C_{10}H_8OS_3$ = 240.4.

CAS — 532-11-6.

ATC — A16AX02.

ATC Vet — QA16AX02.



NOTE. Distinguish from Anethole (above).

Profile

Anethole trithione has been given orally in the management of dry mouth (p.2140) and as a choleretic. The usual daily dose is 75 mg, generally in 3 divided doses before meals; doses of up to 150 mg daily have sometimes been used. Anethole trithione may cause discoloration of the urine.

Preparations

Proprietary Preparations (details are given in Part 3)

Belg.: Sulfarlem; ***Canad.:*** Sialor; ***Fr.:*** Sulfarlem; ***Ger.:*** Mucinol†; ***India:*** Hepasulfol; ***Port.:*** Sufralem†; ***S.Afr.:*** Sulfarlem†; ***Spain:*** Sonicur; ***Switz.:*** Sulfarlem; ***Venez.:*** Sialor†.

Multi-ingredient: ***India:*** Hepasulfol-AA.

Angelica

Andělikový kořen; Angélica; Angelicae radix; Angelikarot; Angélique, racine d'; Angyalgyökér; Archangelica; Archangelicae Radix; Korzeń arcydzięgla; Šventagaršvių šaknys; Väinönputkenjuuri.

CAS — 8015-64-3 (angelica oils).

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

Jpn has separate monographs for *Angelica acutiloba* (Japanese Angelica) and *A. dahurica*.

Chin. specifies *A. dahurica*, *A. dahurica* var. *formosana*, *A. pubescens*, and *A. sinensis*.

Ph. Eur. 6.2 (Angelica Root). The whole or cut, carefully dried rhizome and root of *Angelica archangelica* (*Archangelica officinalis*) containing a minimum of 0.2% v/w of essential oil, calculated with reference to the dried drug.

Profile

Angelica (*Angelica archangelica*) is widely used in herbal medicine. The root is used as a bitter to stimulate the appetite. Angelica also has diaphoretic and expectorant properties and has been used for circulatory and respiratory disorders.

Angelica oil is used in aromatherapy.

Angelica contains furanocoumarins and may cause photosensitivity reactions or interfere with anticoagulant therapy.

Other *Angelica* spp. that are used in herbal medicine include *A. acutiloba* (Japanese angelica), *A. dahurica*, *A. pubescens*, and *A. sinensis* (see Dong Quai, p.2258).

Angelica stems are candied for culinary use.

Homoeopathy. Angelica has been used in homoeopathic medicines under the following names: Archangelica; Angelica archangelica; Angelica archangelica var. archangelica.

Preparations

Proprietary Preparations (details are given in Part 3)

Ger.: Pascovegeton†.

Multi-ingredient: ***Arg.:*** Sigmafem; ***Austral.:*** Capsella Complex; Dong Quai Complex; Extralife Meno-Care; Feminine Herbal Complex; Infant Tonic†; Irontona; Lifesystem Herbal Formula 4 Women's Formula†; Medinat Esten†; Vitatona; Women's Formula Herbal Formula 3†; ***Austria:*** Abdomilon N; ***Canad.:*** Natural HRT; ***Cz.:*** Abdomilon†; Dr Theiss Rheuma Creme†; Dr Theiss Schweden Krauter; Dr Theiss Schwedenbitter; Iberogast; Klosterfrau Melisana; Original Schwedenbitter; Stomaran; Valofyt Neo; ***Fr.:*** Dystolise; Mediflor Tisane Digestive No 3; ***Ger.:*** Abdomilon N; Anore X N†; Carvomin†; Doppelherz Melissengeist†; Gastritol; Iberogast; Infitract†; Melissengeist; Schwedentrunk Elixier; Stovalid N†; ***Hong Kong:*** Phytoestrin†; ***Ital.:*** Florelax; ***Philipp.:*** Hemofer; Zilongjin; ***Pol.:*** Melis-Tonic; Melisal; Melisana Klosterfrau; Melissed; Nervosol; ***Rus.:*** Doppelherz Melissa (Доппельгерц Мелисса); Original Grosser Bittner Balsam (Оригинальный Большой Бальзам Биттнера); ***S.Afr.:*** Melissengeist; Spiritus Contra Tussim Drops; ***Singapore:*** Phytoestrin; ***Spain:*** Agua del Carmen; Himelan†; ***Switz.:*** Alcoolat de Melisse†; Gastrosan; Iberogast; Phytomed Gastro†; ***UK:*** Melissa Comp..

Aniseed

Anice; Anis; Anis, fruit d'; Anís, semilla de; Anis Verde; Anis Vert; Anise; Anise Fruit; Anisi fructus; Anízstermés (fruit); Anyžių vaisiai (fruit); Anýzový plod (fruit); Owoc anyżu (fruit).

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

Ph. Eur. 6.2 (Aniseed; Anisi Fructus). The whole dried fruit of *Pimpinella anisum*, containing not less than 2% v/w of essential oil. It has an odour reminiscent of anethole. Protect from light.

Profile

Aniseed is carminative and mildly expectorant; it is used mainly as anise oil or as preparations of the oil. It may cause contact dermatitis, probably due to its anethole content.

Aniseed is the source of anise oil (below).

◊ References.

1. Chandler RF, Hawkes D. Aniseed—a spice, a flavor, a drug. *Can Pharm J* 1984; **117:** 28–9.
2. Fraj J, *et al.* Occupational asthma induced by aniseed. *Allergy* 1996; **51:** 337–9.
3. Garcia-Gonzalez JJ, *et al.* Occupational rhinoconjunctivitis and food allergy because of aniseed sensitization. *Ann Allergy Asthma Immunol* 2002; **88:** 518–22.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austral.:*** Neo-Cleanse; ***Austria:*** Asthmatee EF-EMES; Brady's-Magentropfen; Euka; Florissamin†; Nesthakchen; Species Carvi comp†; ***Braz.:*** Balsamo Branco; Camomila; ***Canad.:*** Herbal Laxative; ***Chile:*** Paltomiel; ***Cz.:*** Blahungstee N†; ***Fr.:*** Elixir Bonjean; Herbesan; Mediflor Tisane Digestive No 3; Mucinum a l'Extrait de Cascara; ***Ger.:*** Em-eukal Husten- und Brusttee†; Em-medical†; Floradix Multipretten N; Majocarmin-Tee; Ramend Krauter†; rohasal†; Stovalid N†; ***Hong Kong:*** Mucinum Cascara†; ***Israel:*** Jungborn; ***Ital.:*** Anice (Specie Composta)†; Cadifen; Cadimint; Dicalmir; Lassatina†; Tisana Kelemata; ***Pol.:*** Apinorm; ***Port.:*** Mucinum; ***Rus.:*** Original Grosser Bittner Balsam (Оригинальный Большой Бальзам Биттнера); ***S.Afr.:*** Clairo; Cough Elixir; ***Spain:*** Crislaxo; Digestovital†; Laxante Sanatorium; Laxomax†; ***Switz.:*** Kernosan Elixir; Kernosan Heidelberger Poudre; Tisane favorisant l'allaitement; ***UK:*** Herb and Honey Cough Elixir; Revitonil; ***Venez.:*** Neo-Atropan†.

Anise Oil

Anís, aceite esencial de; Anis, huile essentielle d'; Aniseed Oil; Anisi aetheroleum; Anisi Etheroleum; Anisolja; Anisölj y; Ánizsolaj; Anyžių eterinis aliejus; Anýzová silice; Esencia de Anís; Essence d'Anis; Olejek anyżowy; Oleum Anisi.

NOTE. The name anise oil is also applied to Star Anise Oil, p.2392.

Pharmacopoeias. In *Chin.* and *Eur.* (see p.vii). Also in *USNF.*

Ph. Eur. 6.2 (Anise Oil; Anisi Aetheroleum). An essential oil obtained by steam distillation from the dry ripe fruits of *Pimpinella anisum*. It contains less than 1.5% linalol, 0.5 to 5.0% estragole, less than 1.2% α-terpineol, 0.1 to 0.4% *cis*-anethole, 87 to 94% *trans*-anethole, 0.1 to 1.4% anisaldehyde, and 0.3 to 2.0% pseudoisoeugenyl 2-methylbutyrate. A clear, colourless or pale yellow liquid. Relative density 0.980 to 0.990. F.p. 15° to 19°. Store in well-filled, airtight containers at a temperature not exceeding 25°. Protect from light.

USNF 26 (Anise Oil). The volatile oil distilled with steam from the dried, ripe fruit of *Pimpinella anisum* (Apiaceae) or from the dried ripe fruit of *Illicium verum* (Illiaceae). Congealing temperature not lower than 15°. Soluble 1 in 3 of alcohol (90%). Store in well-filled airtight containers. If solid material has separated, carefully warm the oil until it is completely liquefied, and mix before using.

Incompatibility. PVC bottles softened and distorted fairly rapidly in the presence of anise oil, which should not be stored or dispensed in such bottles.[1]

1. Department of Pharmaceutical Sciences of the Pharmaceutical Society of Great Britain. Plastics medicine bottles of rigid PVC. *Pharm J* 1973; **210:** 100.

Profile

Anise oil is carminative and mildly expectorant and is a common ingredient of cough preparations. It is also a flavour. Anise oil is used in aromatherapy.

It may cause contact dermatitis, probably due to its anethole content.

◊ For references to aniseed and anise oil, see Aniseed, above.

Preparations

BP 2008: Camphorated Opium Tincture; Compound Orange Spirit; Concentrated Anise Water; Concentrated Camphorated Opium Tincture; ***USNF 26:*** Compound Orange Spirit.

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austral.:*** Cough Relief†; Digestive Aid; Gartech; ***Austria:*** Bradosol; Bronchostop; Expectal-Tropfen; Heumann's Bronchialtee; Kamillosan; Luuf-Hustentee; Neo-Angin; Nesthakchen; ***Braz.:*** Ovariusedan†; ***Canad.:*** Beech Nut Cough Drops†; ***Cz.:*** Biotussil; Bronchosan; Bronchostop†; Neo-Angin; Stopangin; ***Fr.:*** Paregorique; ***Ger.:*** Aspasmon N†; Bronchoforton; Em-eukal Husten- und Brusttee†; Em-medical†; Ephepect-Pastillen N; Floradix Multipretten N; Heumann Bronchialtee Solubifix T; Hevertopect N†; Kamillosan Mundspray; Leber-Galle-Tropfen 83†; Neo-Ballistol†; Pulmocordio mite SL†; Pulmotin; ratioGast†; Repha-Os; Salmiak†; Salviathymol N; Sinuforton; ***Hong Kong:*** Ephepect Blocker; ***India:*** Bestozyme; Kamillosan-N; Neopeptine; ***Indon.:*** Minyak Telon Cap Tiga Anak; OBH; Silex; ***Neth.:*** Bronchicum; ***Philipp.:*** Kamillosan M; ***Pol.:*** Carmolis; Herbolen D; Tobacoff; ***Rus.:*** Carmolis (Кармолис)†; Carmolis Fluid (Кармолис Жидкость)†; Stopangin (Стопангин); ***S.Afr.:*** Borsdruppels; Paragoriese-Elikser; Puma Cough Balsam; ***Spain:*** Carminativo Ibys†; Carminativo Juventus; H Tussan; Ódontocromil c Sulfamida†; ***Switz.:*** Bronchofluid N†; Carmol; Carmol Plus†; Gem; Kamillosan; Makaphyt Gouttes antitussives; Neo-Bronchol; Odontal; Pastilles bronchiques S nouvelle formule; Pastilles pectorales Demo N; Penta; ***Thai.:*** Gas-Nep; Mesto-Of; ***UK:*** Hactos; Honey & Molasses; Lightning Cough Remedy; Potters Strong Bronchial Catarrh Pastilles; Potters Sugar Free Cough Pastilles; Slippery Elm Stomach Tablets; Vegetable Cough Remover; Zubes; Zubes Blackcurrant.

Anisodamine

6-Hydroxy-hyoscyamine.

$C_{17}H_{23}NO_4$ = 305.4.

CAS — 55869-99-3.

Pharmacopoeias. *Chin.* has a monograph for Raceanisodamine and Anisodamine Hydrobromide.

Profile

Anisodamine is an alkaloid isolated from *Scopolia tangutica* (*Anisodus tanguticus*), a plant used as a traditional medicine in China. It is related to atropine and hyoscyamine and has similar antimuscarinic properties (p.1221). Anisodamine is given orally for its spasmolytic actions in the treatment of gastrointestinal spasm. It has also been tried in circulatory disorders, septic shock, and organophosphorus poisoning.

◊ References.

1. Poupko JM, *et al.* The pharmacological properties of anisodamine. *J Appl Toxicol* 2007; **27:** 116–21.
2. Fu XH, *et al.* Effect of intracoronary administration of anisodamine on slow reflow phenomenon following primary percutaneous coronary intervention in patients with acute myocardial infarction. *Chin Med J (Engl)* 2007; **120:** 1226–31.

Apis mellifera

Abeille domestique; Abeja de la Miel; The honey bee.

Медоносная Пчела Домашняя

Pharmacopoeias. *Eur.* (see p.vii) includes the live worker honey bee for homoeopathic preparations.

Ph. Eur. 6.2 (Honey Bee for Homoeopathic Preparations; Apis Mellifera ad Praeparationes Homoeopathicas). Live worker honey bee, *Apis mellifera*.

Profile

The honey bee is a source of purified honey (p.1948), royal jelly (p.2382), propolis (p.2373), and bee pollen (see Pollen and Pollen Extracts, p.2370).

Homoeopathy. Preparations of *Apis mellifera* have been used in homoeopathic medicines under the following names: Apis; Apis mellifica; Apis mel; Apis mell.

Arthritis. Bee venom has traditionally been used in the treatment of arthritis.[1,2] Studies *in vitro* have shown that bee venom has anti-inflammatory activity similar to that of cyclophosphamide. Melittin appears to be the active constituent, and seems to act by interfering with superoxide radical production from human leucocytes.[1]

1. Somerfield SD. Bee venom and arthritis: magic, myth or medicine? *N Z Med J* 1986; **99:** 281–3.
2. Caldwell JR. Venoms, copper and zinc in the treatment of arthritis. *Rheum Dis Clin North Am* 1999, **25:** 919–28.

Hypersensitivity. For reference to the use of whole body extracts or venom from Hymenoptera spp. for allergen immunotherapy in allergic subjects, see p.2251. For reference to hypersensitivity reactions to bee products see under Royal Jelly, p.2382.

Preparations

Proprietary Preparations (details are given in Part 3)
Multi-ingredient: ***S.Afr.:*** Bolus Eucalypti Comp; ***Switz.:*** Forapin†.

Apricot

Pharmacopoeias. *Chin.* includes Bitter Apricot Seed, the kernel obtained from various species of *Prunus*. *Jpn* includes a monograph for Apricot Kernel.

Profile

The kernels of the apricot, *Prunus armeniaca* (*Armeniaca vulgaris*; *P. tiliifolia*) (Rosaceae), are used in Chinese medicine for disorders of the respiratory tract and for constipation.

Apricot is a source of persic oil (p.2365). Amygdalin, the major cyanogenic glycoside of apricot kernels, is the major constituent of laetrile (p.2330). Apricot kernels are also a source of pangamic acid (p.2362).

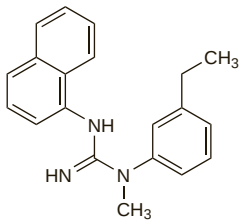
Apricot fruits are used as a food.

Aptiganel *(pINN)*

Aptiganelum. 1-(*m*-Ethylphenyl)-1-methyl-3-(1-naphthyl)guanidine.

Аптиганел

$C_{20}H_{21}N_3$ = 303.4.
CAS — 137159-92-3.



Aptiganel Hydrochloride *(USAN)*

CNS-1102.

$C_{20}H_{21}N_3$,HCl = 339.9.
CAS — 137160-11-3.

Profile

Aptiganel is a guanidine derivative that antagonises the effects of the excitatory amino-acid neurotransmitter glutamate at NMDA-receptors. It has been investigated for the prevention of ischaemic brain damage in patients with traumatic head injury or stroke.

◊ Following dose-ranging studies of aptiganel in healthy subjects[1] and in patients,[2] adverse effects reported[3] in patients with acute ischaemic stroke, at doses that had been neuroprotective in *animals*, included an increase in systolic blood pressure and an excess of CNS effects. A randomised controlled study[4] in patients with acute ischaemic stroke was suspended because of a lack of efficacy and a potential imbalance in mortality compared with placebo.

1. Muir KW, *et al.* Pharmacological effects of the non-competitive NMDA antagonist CNS 1102 in normal volunteers. *Br J Clin Pharmacol* 1994; **38:** 33–8.
2. Block GA, *et al.* Final results from a dose-escalating safety and tolerance study of the non-competitive NMDA antagonist CNS1102 in patients with acute cerebral ischaemia. *Stroke* 1995; **26:** 185.
3. Dyker AG, *et al.* Safety and tolerability study of aptiganel hydrochloride in patients with an acute ischemic stroke. *Stroke* 1999; **30:** 2038–42.
4. Albers GW, *et al.* Aptiganel hydrochloride in acute ischemic stroke: a randomized controlled trial. *JAMA* 2001; **286:** 2673–82.

Arachis Oil

Arachide, huile d', raffinée; Arachidis Oleum; Arachidis oleum raffinatum; Cacahuete, aceite de; Earth-nut Oil; Erdnussöl; Finomított földimogyoróolaj; Ground-nut Oil; Huile d'Arachide; Jordnötolja, raffinerad; Maapähkinäöljy, puhdistettu; Nut Oil; Ol. Arach.; Olej arachidowy oczyszczony; Óleo de Amendoim; Oleum Arachis; Peanut Oil; Podzemnicový olej čištěný; Refined Arachis Oil; Yerfıstığı Yağı; Žemės riešutų aliejus.

Pharmacopoeias. In *Eur.* (see p.vii), *Int.*, and *Jpn*. Also in *USNF*.

Eur. also includes hydrogenated arachis oil.

Ph. Eur. 6.2 (Arachis Oil, Refined; Arachis Oil BP 2008). The refined fatty oil obtained from the shelled seeds of *Arachis hypogaea*. A suitable antoxidant may be added. It is a clear, yellowish viscous liquid consisting of glycerides, chiefly of oleic and linoleic acids, with smaller amounts of other acids. It solidifies at about 2°. Very slightly soluble in alcohol; miscible with petroleum spirit. Store in well-filled containers. Protect from light.

The BP 2008 gives Ground-nut Oil and Peanut Oil as approved synonyms.

Ph. Eur. 6.2 (Arachis Oil, Hydrogenated; Arachidis Oleum Hydrogenatum). Arachis oil that has been refined, bleached, hydrogenated, and deodorised. It is a white or faintly yellowish soft mass that melts to a clear pale yellow liquid when heated. Practically insoluble in water; very slightly soluble in alcohol; freely soluble in dichloromethane and in petroleum spirit (b.p. 65° to 70°). Protect from light.

USNF 26 (Peanut Oil). The fully-refined (alkali-refined, bleached, and deodorised at 230° to 260°) oil obtained from the seed kernels of one or more of the cultivated varieties of *Arachis hypogaea* (Leguminosae). It is a colourless or pale yellow, oily liquid with a bland taste; it may have a characteristic nutty odour. Very slightly soluble in alcohol; miscible with carbon disulfide, with chloroform, and with ether. Store at a temperature not exceeding 40° in airtight containers. Protect from light.

Profile

Emulsions containing arachis oil are used in nutrition. Arachis oil is given as an enema for softening impacted faeces. It is used in drops for softening ear wax (see under Docusates, p.1725) and in emollient creams. Arachis oil is given by mouth, usually with sorbitol, as a gallbladder evacuant prior to cholecystography.

Precautions. It has been suggested that the use during infancy of preparations containing arachis oil, including infant formulae and topical preparations, may be responsible for sensitisation to peanut, with a subsequent risk of hypersensitivity reactions.[1-3] The arachis oil used in such preparations is refined oil and it has been pointed out that such oil should not contain the proteins that produce allergic reactions in susceptible people.[4,5] In the USA, heating of arachis oil during preparation, to further reduce protein content, has been proposed.[6] Nonetheless, some consider that sufficient protein may be present in refined oil to cause sensitisation.[7] However, others have pointed out that to date, there are no reliable data about doses of topical arachis oil needed to induce sensitisation via the epidermal route and that the benefit of protecting skin barrier functions in atopic patients with products using refined arachis oil outweigh possible risks of sensitisation.[8] In the UK, the CSM considered that there was not enough evidence to conclude that medicinal products containing arachis oil could lead to sensitisation.[9] However, although they considered the risk of a reaction to be low, they recommended that patients known to be allergic to peanuts should not use medicines containing arachis oil (nor, because of the possibility of cross-sensitivity, should patients allergic to soya), and that such medicines should include an appropriate warning in the labelling.

1. de Montis G, *et al.* Sensitisation to peanut and vitamin D oily preparations. *Lancet* 1993; **341:** 1411.
2. Lever LR. Peanut and nut allergy: creams and ointments containing peanut oil may lead to sensitisation. *BMJ* 1996; **313:** 299.
3. Lack G, *et al.* Factors associated with the development of peanut allergy in childhood. *N Engl J Med* 2003; **348:** 977–85.
4. Hourihane J O'B, *et al.* Randomised, double blind, crossover challenge study of allergenicity of peanut oil in subjects allergic to peanuts. *BMJ* 1997; **314:** 1084–8.
5. Committee on Toxicity of chemicals in Food, Consumer Products and the Environment. *Peanut allergy.* London: Department of Health, 1998.
6. Wilkin JK, *et al.* Peanut allergy. *N Engl J Med* 2003; **349:** 302.
7. Lack G, *et al.* Peanut allergy. *N Engl J Med* 2003; **349:** 302–3.
8. Ring J, Möhrenschlager M. Allergy to peanut oil — clinically relevant? *J Eur Acad Dermatol Venereol* 2007; **21:** 452–5.
9. Committee on Safety of Medicines/Medicines and Healthcare Regulatory Agency. Medicines containing peanut (arachis) oil. *Current Problems* 2003; **29:** 5. Also available at: http://www.mhra.gov.uk/home/idcplg?IdcService=GET_FILE&dDocName=CON007450&RevisionSelectionMethod=LatestReleased (accessed 14/07/06)

Preparations

BP 2008: Arachis Oil Enema.

Proprietary Preparations (details are given in Part 3)
Austral.: Calogen; ***Chile:*** Oilatum; ***Denm.:*** Olie; ***Fin.:*** Calogen; ***Ger.:*** Olbad Cordes F; ***Indon.:*** Oilatum Cream; ***Irl.:*** Calogen; Fletcher's Arachis Oil; Oilatum Cream; ***Ital.:*** Calogen; ***Mex.:*** Dermo Bell; Nutrisil; Oilatum; ***NZ:*** Calogen; ***S.Afr.:*** Oilatum Cream; ***Singapore:*** Oilatum Cream; ***UK:*** Calogen; Fletchers Arachis Oil Retention Enema†.

Multi-ingredient: ***Austral.:*** Cerumol; Gold Cross Skin Basics Zinc Cream†; Medevac†; ***Austria:*** Balneum F; ***Chile:*** Tarytar†; ***Cz.:*** Balneum Hermal F; ***Ger.:*** Balneum F; Parfenac Basisbad†; ***Irl.:*** Cerumol; Hydromol†; ***Israel:*** Balneum F; Cerumol; ***Ital.:*** Balneum Hermal Forte; ***NZ:*** Medevac†; ***Pol.:*** Balneum Hermal F; ***S.Afr.:*** Cerumol; Haarlemensis; ***Singapore:*** Cerumol; ***Spain:*** Emolytar; ***Switz.:*** Balmed Hermal F; Balneum Hermal F†; ***UK:*** Cerumol; Earex; Hewletts; Nowax; Red Oil; Soothol.

Areca

Areca Nuts; Arecae Semen; Arekasame; Betel; Betel Nuts; Noix d'Arec.

NOTE. The following terms have been used as 'street names' (see p.vi) or slang names for various forms of areca:
Daka; Gua; Maag; Mak; Marg; Pan parag; Pinang; Pugua; Puwak; Supai; Suparim.

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

Profile

Areca consists of the dried ripe seeds of *Areca catechu* (Palmae) containing the alkaloid arecoline.

Areca is used in Asian countries as a masticatory. It has sialogogue properties and is chewed for its mild intoxicant and euphoriant effects. The usual custom is to chew pieces of areca seed (areca nut; betel nut) wrapped with lime (calcium hydroxide) in the leaf of the betel pepper (betelvine) (*Piper betle*, which is unrelated to areca). This preparation is known as 'betel quid' (betel) or 'paan' (pan-masala), and produces a red juice when chewed, which stains the saliva, teeth and mucosa. Other ingredients that might be added include catechu gum, spices, or tobacco.

Arecoline and arecaidine (produced by the hydrolysis of arecoline when chewed with lime) have cholinergic activity, and adverse effects that may occur with initial or heavy use of areca include excessive salivation, sweating, lachrymation, urinary incontinence, or diarrhoea. An increased incidence of oral submucosal fibrosis, oral leucoplakia, and oral squamous cell carcinoma has been reported following habitual use.

Areca was formerly used in the treatment of tapeworm infection, and arecoline has been used in veterinary medicine as a purgative and taenifuge.

◊ Discussions of the health risks associated with the chewing of preparations containing areca nut by indigenous populations in Asia[1-3] and immigrant groups in the UK,[4] USA,[5] and New Zealand,[6] including acute effects.[2,3,5] See also Adverse Effects of Tobacco Products under Nicotine (p.2352) for reference to mixtures of areca and tobacco.

1. Mack TM. The new pan-Asian paan problem. *Lancet* 2001; **357:** 1638–9.
2. Deng JF, *et al.* Acute toxicities of betel nut: rare but probably overlooked events. *J Toxicol Clin Toxicol* 2001; **39:** 355–60.
3. Chu NS. Effects of Betel chewing on the central and autonomic nervous systems. *J Biomed Sci* 2001; **8:** 229–36.
4. Warnakulasuriya S, *et al.* Areca nut use: an independent risk factor for oral cancer. *BMJ* 2002; **324:** 799–800.
5. Nelson BS, Heischober B. Betel nut: a common drug used by naturalized citizens from India, Far East Asia, and the South Pacific Islands. *Ann Emerg Med* 1999; **34:** 238–43.
6. Yoganathan P. Betel chewing creeps into the New World. *N Z Dent J* 2002; **98:** 40–5.

Carcinogenicity. Precancerous and cancerous conditions of the oral cavity have been attributed to the chewing of preparations containing areca (see above). In betel-chewer's mucosa, the oral mucosa is discoloured and there is desquamation or peeling of the oral epithelium from the traumatic effect of chewing and possibly a chemical action of the constituents. This condition may be a precursor of oral submucosal fibrosis, which is considered to be precancerous.[1] Oral leucoplakia is another precancerous condition that is reported. The role of areca in the development of these conditions and oral squamous cell carcinoma has been debated. The effects may be due to the arecaidine content of areca, the alkalinity of the lime, presence of tobacco, or a combination of these.[2,3] Results from a case-controlled study[4] point to an independent association between oral squamous cell carcinoma and chewing areca seeds in preparations without tobacco compared with non-users of areca. A review[5] of available evidence strongly supports this association.

1. Reichart PA, Philipsen HP. Betel chewer's mucosa—a review. *J Oral Pathol Med* 1998; **27:** 239–42.
2. Norton SA. Betel: consumption and consequences. *J Am Acad Dermatol* 1998; **38:** 81–8.
3. Nelson BS, Heischober B. Betel nut: a common drug used by naturalized citizens from India, Far East Asia, and the South Pacific Islands. *Ann Emerg Med* 1999; **34:** 238–43.
4. Merchant A, *et al.* Paan without tobacco: an independent risk factor for oral cancer. *Int J Cancer* 2000; **86:** 128–31.
5. Nair U, *et al.* Alert for an epidemic of oral cancer due to use of the betel quid substitutes gutkha and pan masala: a review of agents and causative mechanisms. *Mutagenesis* 2004; **19:** 251–62.

Effects on the lungs. Evidence suggesting that there is an association between betel-nut chewing and bronchoconstriction in asthmatic patients.[1,2]

1. Taylor RFH, *et al.* Betel-nut chewing and asthma. *Lancet* 1992; **339:** 1134–6.
2. Kiyingi KS. Betel nut chewing and asthma. *Lancet* 1992; **340:** 59–60.

Effects on the nervous system. Areca-nut (betel-nut) chewing is associated with habituation, addiction, and dependence,[1] and CNS symptoms of withdrawal have been described in 2 patients.[2] A case of neonatal withdrawal syndrome in an infant born to a chronic areca-nut user has also been reported.[3] Psychosis has also been reported.[1]

It has been suggested that the muscarinic action of areca alkaloids may have a beneficial effect on symptoms of schizophrenia, and a study of such patients in a Micronesian population provides some support for this idea.[4] However, severe extrapyramidal symptoms followed betel-nut chewing in 2 patients with chronic schizophrenia who were also receiving antipsychotic therapy.[5]

1. Nelson BS, Heischober B. Betel nut: a common drug used by naturalized citizens from India, Far East Asia, and the South Pacific Islands. *Ann Emerg Med* 1999; **34:** 238–43.