Hypersensitivity. References to asthma developing after occupational exposure to amylases used in the flour milling[1-3] and detergent[4,5] manufacturing industries, and studies[6-8] to assess the likelihood of developing amylase hypersensitivity after ingesting wheat products including bread.

1. Smith TA, *et al.* Respiratory symptoms and wheat flour exposure: a study of flour millers. *Occup Med (Lond)* 2000; **50:** 25–9.
2. Cullinan P, *et al.* Allergen and dust exposure as determinants of work-related symptoms and sensitization in a cohort of flour-exposed workers; a case-control analysis. *Ann Occup Hyg* 2001; **45:** 97–103.
3. Quirce S, *et al.* Glucoamylase: another fungal enzyme associated with baker's asthma. *Ann Allergy Asthma Immunol* 2002; **89:** 197–202.
4. Hole AM, *et al.* Occupational asthma caused by bacillary amylase used in the detergent industry. *Occup Environ Med* 2000; **57:** 840–2.
5. Cullinan P, *et al.* An outbreak of asthma in a modern detergent factory. *Lancet* 2000; **356:** 1899–1900.
6. Cullinan P, *et al.* Clinical responses to ingested fungal alpha-amylase and hemicellulase in persons sensitized to Aspergillus fumigatus? *Allergy* 1997; **52:** 346–9.
7. Sander I, *et al.* Is fungal alpha-amylase in bread an allergen? *Clin Exp Allergy* 2000; **30:** 560–5.
8. Simonato B, *et al.* IgE binding to soluble and insoluble wheat flour proteins in atopic and non-atopic patients suffering from gastrointestinal symptoms after wheat ingestion. *Clin Exp Allergy* 2001; **31:** 1771–8.

Uses and Administration

The term amylase refers to an enzyme catalysing the hydrolysis of α-1,4-glucosidic linkages of polysaccharides such as starch, glycogen, or their degradation products. Amylases may be classified according to the manner in which the glucosidic bond is attacked. Endoamylases attack the α-1,4-glucosidic linkage at random. Alpha-amylases are the only types of endoamylases known and yield dextrins, oligosaccharides, and monosaccharides. The more common alpha-amylases include those isolated from human saliva, mammalian pancreas, *Bacillus subtilis, Aspergillus oryzae*, and barley malt. Exoamylases attack the α-1,4-glucosidic linkage only from the non-reducing outer polysaccharide chain ends. They include beta-amylases and glucoamylases (amyloglucosidases or gamma-amylases) and are of vegetable or microbial origin. Beta-amylases yield beta-limit dextrins and maltose, and glucoamylases yield glucose.

Amylase is used in the production of predigested starchy foods and for the conversion of starch to fermentable sugars in the baking, brewing, and fermentation industries.

Amylase from various sources has been used as an ingredient of preparations of mixed digestive enzymes, and has been given by mouth for its supposed activity in reducing respiratory-tract inflammation and local swelling and oedema. Pancreatic enzymes such as pancreatin (p.2360) and pancrelipase (p.2360) have amylase activity.

Preparations

Proprietary Preparations (details are given in Part 3)
Cz.: Orenzym; ***Fr.:*** Flaviastase; Maxilase; Megamylase; Ribamylase; ***Port.:*** Maxilase.

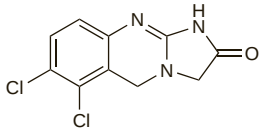
Multi-ingredient: ***Arg.:*** Docechol; Dom-Polienzim; Gastridin-E; Homocisteon Compuesto; Pakinase; Polienzim; Tridigestivo Soubeiran; ***Austral.:*** Enzyme; ***Austria:*** Wobenzym; ***Belg.:*** Digestomen; ***Braz.:*** Bromelin†; Enziprid†; Essen; Filogaster†; Pantopept†; Primeral; Thiomucase; ***Canad.:*** Digesta; ***Chile:*** Flapex E; ***Cz.:*** Wobenzym; ***Ger.:*** Enzym-Wied†; ***Hong Kong:*** Digezym; Enzyplex; Magesto; ***India:*** Aristozyme; Bestozyme; Catazyme-P; Digeplex; Digeplex-T; Dipep; Farizym; Lupizyme; Molzyme†; Neopeptine; Nutrozyme; Papytazyme; Sanzyme-DS; Unienzyme; Vitazyme; ***Indon.:*** Aludonna; Enzyplex; Excelase-E; Librozym; Librozym Plus; Vitazym; Xepazym; ***Ital.:*** Digestopan†; Essen Enzimatico†; ***Jpn:*** Cabagin; ***Malaysia:*** Biotase; Enzyplex; Pepfiz; ***Mex.:*** Ochozim; Wobenzym; Zimotris; ***Port.:*** Modulanzime; ***Rus.:*** Pepfiz (Пепфиз); Wobenzym (Вобэнзим); ***Singapore:*** Biotase; Enzyplex; Weisen-U†; ***Spain:*** Demusin; Digestomen Complex; Paidozim; ***Switz.:*** Zymoplex†; ***Thai.:*** Diasgest; Digestin; Endogest†; Enzyplex; Flatulence; Magesto; Mesto-Of; Papytazyme†; Pepfiz; Pepsitase; Polyenzyme-I; ***UK:*** Enzyme Digest; Enzyme Plus; ***USA:*** Enzyme; Ku-Zyme; Kutrase; Papaya Enzyme; ***Venez.:*** Festal Reformulado.

Anagrelide Hydrochloride *(BANM, USAN, rINNM)*

Anagrélide, Chlorhydrate d'; Anagrelidi Hydrochloridum; BL-4162a; BMY-26538-01; Hidrocloruro de anagrelida. 6,7-Dichloro-1,5-dihydroimidazo[2,1-*b*]quinazolin-2(3*H*)-one hydrochloride.

Анагрелида Гидрохлорид

$C_{10}H_7Cl_2N_3O,HCl$ = 292.5.
CAS — 68475-42-3 (anagrelide); 58579-51-4 (anagrelide hydrochloride).
ATC — L01XX35.
ATC Vet — QL01XX35.



(anagrelide)

Adverse Effects

Adverse effects most commonly reported with anagrelide include headache, palpitations and tachycardia, fluid retention, diarrhoea, nausea, and abdominal pain; fatigue, dizziness, flatulence, vomiting, dyspnoea, skin rash, and anaemia have also occurred. Cardiovascular effects also include vasodilatation and positive inotropic effects; myocardial infarction, cardiomyopathy and heart failure have been reported. Anagrelide has been shown to be embryotoxic and fetotoxic in *animal* studies.

Effects on the heart. High-output heart failure occurred in a patient given anagrelide for essential thrombocytosis.[1] Clinical and haemodynamic adverse effects resolved almost immediately on stopping anagrelide.

1. Engel PJ, *et al.* High-output heart failure associated with anagrelide therapy for essential thrombocytosis. *Ann Intern Med* 2005; **143:** 311–13.

Effects on the lungs. Severe life-threatening hypersensitivity pneumonitis has been associated with anagrelide.[1]

1. Raghavan M, *et al.* Severe hypersensitivity pneumonitis associated with anagrelide. *Ann Pharmacother* 2003; **37:** 1228–31.

Erectile dysfunction. Erectile dysfunction associated with anagrelide therapy has been reported in a patient.[1]

1. Braester A, Laver B. Anagrelide-induced erectile dysfunction. *Ann Pharmacother* 2002; **36:** 1291.

Precautions

Anagrelide is mainly removed from the body by hepatic metabolism, and its use is contra-indicated in patients with severe hepatic impairment. In the UK it is additionally contra-indicated in those with moderate impairment, but in the USA its use is permitted in such patients at reduced doses (see below). Licensed drug information in the UK also contra-indicates its use in those with moderate to severe renal impairment (creatinine clearance less than 50 mL/minute).

Anagrelide should be used with caution in patients with cardiovascular disease. Cardiac function should be assessed in patients before and during treatment, and patients monitored for cardiovascular adverse effects during treatment. For precautions in patients taking anagrelide with aspirin, see Interactions, below.

Platelet counts should be monitored closely, especially at the start of treatment (see Uses and Administration, below). Haemoglobin, white blood cells, and hepatic and renal function should also be monitored until a maintenance dose is established.

Dizziness may affect the performance of skilled tasks such as driving.

Anagrelide should not be used during pregnancy.

Interactions

There is the theoretical possibility that inhibitors of the cytochrome P450 isoenzyme CYP1A2, including grapefruit juice, could reduce the clearance of anagrelide. Anagrelide itself demonstrates limited inhibitory activity towards CYP1A2. Anagrelide may exacerbate the effects of other phosphodiesterase inhibitors such as amrinone, cilostazol, enoximone, milrinone, and olprinone that also produce positive inotropic effects.

Potentiation of the effects of other drugs that modify platelet function when given with anagrelide is a theoretical possibility; although no clinically significant effects have been seen when given with aspirin, the UK manufacturer suggests that the risk-benefit potential should be assessed before using both drugs in patients with a platelet count above 1 500 000 cells/mm^3 and/or a history of haemorrhage.

Pharmacokinetics

Anagrelide is well absorbed from the gastrointestinal tract with peak plasma concentrations occurring about 1 hour after an oral dose on an empty stomach, increasing to 3 hours in the presence of food, although this appears to have no clinically significant effect on bioavailability. It is extensively metabolised, primarily by the cytochrome P450 isoenzyme CYP1A2, and eliminated in the urine; less than 1% of a dose is excreted unchanged. The plasma half-life is about 1.3 hours.

Uses and Administration

Anagrelide is an inhibitor of cyclic AMP phosphodiesterase III that reduces platelet production and, at higher than therapeutic doses, inhibits platelet aggregation. It is used to treat primary (essential) thrombocythaemia (p.654) in patients intolerant of, or unresponsive to, other therapy, and also in thrombocythaemia secondary to other myeloproliferative disorders.

Anagrelide is given orally as the hydrochloride monohydrate ($C_{10}H_7Cl_2N_3O,HCl,H_2O$ = 310.6) but doses are expressed in terms of the base; 1.2 mg of anagrelide hydrochloride monohydrate is equivalent to about 1 mg of anagrelide. The initial dose is the equivalent of anagrelide 1 mg daily in 2 divided doses. After at least a week, the dose is adjusted, by increasing the daily dose by not more than 500 micrograms in any one week, until the platelet count is maintained within the normal range. The usual maintenance dose is 1 to 3 mg daily. The dose should not exceed 10 mg daily or 2.5 mg as a single dose. In the USA, a higher initial dose of 2 mg daily, divided into 2 or 4 doses, is used; an initial daily dose of 500 micrograms is recommended in children. For doses to be used in patients with hepatic impairment, see below.

The effects of anagrelide therapy must be regularly monitored: platelet counts should be measured every 2 days during the first week of treatment and then at least weekly until the maintenance dose is reached.

◊ References.

1. Spencer CM, Brogden RN. Anagrelide: a review of its pharmacodynamic and pharmacokinetic properties, and therapeutic potential in the treatment of thrombocythaemia. *Drugs* 1994; **47:** 809–22.
2. Chintagumpala MM, *et al.* Treatment of essential thrombocythemia with anagrelide. *J Pediatr* 1995; **127:** 495–8.
3. Petitt RM, *et al.* Anagrelide for control of thrombocythemia in polycythemia and other myeloproliferative disorders. *Semin Hematol* 1997; **34:** 51–4.
4. Oertel MD. Anagrelide, a selective thrombocytopenic agent. *Am J Health-Syst Pharm* 1998; **55:** 1979–86.
5. Lackner H, *et al.* Treatment of children with anagrelide for thrombocythemia. *J Pediatr Hematol Oncol* 1998; **20:** 469–73.
6. Bellucci S, *et al.* Studies of platelet volume, chemistry and function in patients with essential thrombocythaemia treated with anagrelide. *Br J Haematol* 1999; **104:** 886–92.
7. Pescatore SL, Lindley C. Anagrelide: a novel agent for the treatment of myeloproliferative disorders. *Expert Opin Pharmacother* 2000; **1:** 537–46.
8. Dingli D, Tefferi A. Anagrelide: an update on its mechanisms of action and therapeutic potential. *Expert Rev Anticancer Ther* 2004; **4:** 533–41.
9. Steurer M, *et al.* Anagrelide for thrombocytosis in myeloproliferative disorders: a prospective study to assess efficacy and adverse event profile. *Cancer* 2004; **101:** 2239–46.
10. Wagstaff AJ, Keating GM. Anagrelide: a review of its use in the management of essential thrombocythaemia. *Drugs* 2006; **66:** 111–31.

Administration in hepatic impairment. UK licensed drug information recommends that anagrelide should not be given to patients with moderate or severe hepatic impairment. In the USA, anagrelide therapy is not recommended in patients with severe hepatic impairment, although patients with moderate hepatic impairment have been given anagrelide in an initial daily dose of 500 micrograms, which should be maintained for a minimum of 1 week and with cardiovascular monitoring; the daily dose may then be increased cautiously as above.

Preparations

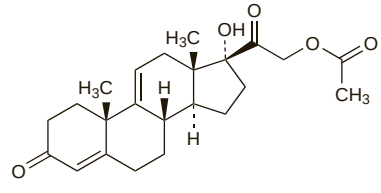
Proprietary Preparations (details are given in Part 3)
Arg.: Agrelid; ***Austral.:*** Agrylin; ***Austria:*** Thromboreductin; ***Belg.:*** Xagrid; ***Braz.:*** Agrylin†; ***Canad.:*** Agrylin; ***Cz.:*** Thromboreductin; Xagrid; ***Denm.:*** Xagrid; ***Fin.:*** Xagrid; ***Fr.:*** Xagrid; ***Ger.:*** Agrylin†; Xagrid; ***Hong Kong:*** Agrylin; Thromboreductin; ***Hung.:*** Thromboreductin; ***Indon.:*** Agrylin; Thromboreductin; ***Irl.:*** Xagrid; ***Israel:*** Agrylin; ***Ital.:*** Xagrid; ***Malaysia:*** Thromboreductin; ***Neth.:*** Xagrid; ***Norw.:*** Xagrid; ***Philipp.:*** Agrylin; ***S.Afr.:*** Agrylin; ***Spain:*** Xagrid; ***Swed.:*** Xagrid; ***Switz.:*** Xagrid; ***UK:*** Xagrid; ***USA:*** Agrylin.

Anecortave *(rINN)*

AL-3789; Anecortava; Anécortave; Anecortave Acetate *(USAN)*; Anecortavum. 17,21-Dihydroxypregna-4,9(11)-diene-3,20-dione 21-acetate.

Анекортав

$C_{23}H_{30}O_5$ = 386.5.
CAS — 7753-60-8.
ATC — S01LA02.
ATC Vet — QS01LA02.



Profile

Anecortave is an angiostatic cortisene under investigation for the treatment of patients with neovascular (wet) age-related macular degeneration (p.785). It is similar in structure to cortisol acetate but without any glucocorticoid activity and is able to inhibit several steps of the neovascularisation process. It is given by posterior juxtascleral depot injection and is available in some countries for compassionate use on a named-patient basis.

◊ References.

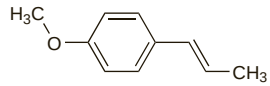
1. Clark AF. Mechanism of action of the angiostatic cortisene anecortave acetate. *Surv Ophthalmol* 2007; **52** (suppl 1): S26–S34.
2. Regillo CD, *et al.* Clinical safety profile of posterior juxtascleral depot administration of anecortave acetate 15 mg suspension as primary therapy or adjunctive therapy with photodynamic therapy for treatment of wet age-related macular degeneration. *Surv Ophthalmol* 2007; **52** (suppl 1): S70–S78.
3. Russell SR, *et al.* Anecortave acetate for the treatment of exudative age-related macular degeneration—a review of clinical outcomes. *Surv Ophthalmol* 2007; **52** (suppl 1): S79–S90.
4. Geltzer A, *et al.* Surgical implantation of steroids with antiangiogenic characteristics for treating neovascular age-related macular degeneration. Available in The Cochrane Database of Systematic Reviews; Issue 4. Chichester: John Wiley; 2007 (accessed 08/04/08).

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

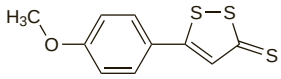
Anethole Dithiolthione; Anetol tritiona; SKF-1717; Trithioparamethoxyphenylpropene. 5-(4-Methoxyphenyl)-3*H*-1,2-dithiole-3-thione.

$C_{10}H_8OS_3$ = 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.