nous injection. Serum-gastrin concentrations are measured for up to 30 minutes following the diagnostic dose.

Secretin is also used in a dose of 1 clinical unit/kg (200 nanograms/kg) by slow intravenous injection as an aid in the identification of the pancreatic ducts in patients undergoing endoscopic retrograde cholangiopancreatography.

Autism. There have been anecdotal reports of improvement in behaviour in autistic children given porcine secretin. However, a double-blind placebo-controlled study1 involving 60 children with autism or pervasive developmental disorder noted no benefit over 4 weeks after a single infusion of 400 nanograms/kg of synthetic human secretin. A randomised, placebo-controlled study2 in 64 children with autism has similarly found no evidence of efficacy from 2 repeated doses of porcine secretin. Further controlled studies have likewise failed to demonstrate efficacy.3

- Sandler AD, et al. Lack of benefit of a single dose of synthetic human secretin in the treatment of autism and pervasive devel-opmental disorder. N Engl J Med 1999; 341: 1801–6.
- 2. Roberts W, et al. Repeated doses of porcine secretin in the treatment of autism: a randomized, placebo-controlled trial. Abstract: Pediatrics 2001; 107: e71. Full version: http://pediatrics.aappublications.org/cgi/content/full/107/5/e71 (accessed 08/07/04)
- 3. Levy SE, et al. Children with autistic spectrum disorders. I: comparison of placebo and single dose of human synthetic secretin.

 Arch Dis Child 2003; 88: 731–6.
- Coplan J, et al. Children with autistic spectrum disorders. II: parents are unable to distinguish secretin from placebo under double-blind conditions. Arch Dis Child 2003; 88: 737–9.

Preparations

Proprietary Preparations (details are given in Part 3) Ger.: Secrelux; USA: ChiRhoStim; SecreFlo

Selfotel (USAN, rINN)

CGS-19755; Selfotelum. cis-4-(Phosphonomethyl)pipecolic acid. Сельфотел

 $C_7H_{14}NO_5P = 223.2.$ CAS - 110347-85-8.

Profile

Selfotel is an N-methyl-D-aspartate (NMDA) antagonist that has been investigated for use in ischaemic stroke and head trauma.

♦ References

- Davis SM, et al. Termination of acute stroke studies involving selfotel treatment. Lancet 1997; 349: 32.
- Yenari MA, et al. Dose escalation safety and tolerance study of the competitive NMDA antagonist selfotel (CGS 19755) in neu-rosurgery patients. Clin Neuropharmacol 1998; 21: 28–34.
- 153 Stewart L, et al. First observations of the safety and tolerability of a competitive antagonist to the glutamate NMDA receptor (CGS 19755) in patients with severe head injury. J Neurotrauma (1992) 15-12-15. 1999; 16: 843-50.
- 4. Morris GF, et al. The Selfotel Investigators. Failure of the competitive N-methyl-D-aspartate antagonist selfotel (CGS 19755) in the treatment of severe head injury: results of two phase III clinical trials. *J Neurosurg* 1999; **91:** 737–43.
- Davis SM, et al. Selfotel in acute ischemic stroke: possible neu-rotoxic effects of an NMDA antagonist. Stroke 2000; 31: 347-54.

Senecio

Крестовник Золотистый (Senecio aureus); Крестовник Якова (Senecio jacobaea)

The ragwort, Senecio jacobaea, and, in the USA, the golden ragwort (golden senecio; liferoot; squaw weed), S. aureus (Compositae), have been used in the form of extracts as emmenagogues but are of doubtful value. Ragwort, in the form of a decoction or ointment, has also been applied externally to aid wound healing and in the treatment of peripheral vascular disor-

Many species of the genus Senecio, which includes the ragworts and groundsels, are poisonous. They have been found to contain pyrrolizidine alkaloids, which produce hepatic necrosis. The ragwort, S. jacobaea, which is abundant throughout the British Isles, is poisonous to livestock when eaten in quantity. Poisoning has also been reported in humans after ingestion of herbal teas containing pyrrolizidine alkaloids. In the UK, the sale, supply, or importation of unlicensed medicinal products containing Senecio spp. for internal use is prohibited.

Homoeopathy. Golden ragwort has been used in homoeopathic medicines under the following names: Senecio aur.; Senecio aureus: Sen. aur..

Preparations

roprietary Preparations (details are given in Part 3) Multi-ingredient: Canad.: Thunas Tab for Menstrual Pain†.

Senicapoc (USAN, rINN)

17043; ICA-17043; Sénicapoc; Senicapocum. 2,2-bis (4-Fluorophenyl)-2-phenylacetamide.

Сеникапок

 $C_{20}H_{15}F_2NO = 323.3.$ CAS — 289656-45-7.

Profile

Senicapoc is an inhibitor of the Gardos calcium-activated potassium channel. It has been investigated to prevent the dehydration of red cells in sickle-cell anaemia.

Senlizumab (BAN)

Bay-10-3356; Bay-w-3356; CDP-571.

Сенлизумаб

CAS — 336128-48-4.

Profile

Senlizumab is a humanised monoclonal antibody to tumour necrosis factor. It has been investigated in the treatment of Crohn's disease, ulcerative colitis, and rheumatoid arthritis.

♦ References

- Rankin EC, et al. The therapeutic effects of an engineered human anti-tumour necrosis factor alpha antibody (CDP571) in rheuma-toid arthritis. Br J Rheumatol 1995; 34: 334-42.
 Evans RC, et al. Treatment of ulcerative colitis with an engi-
- neered human anti-TNF alpha antibody CDP571. Aliment Pharmacol Ther 1997; 11: 1031-5.
- Stack WA, et al. Randomised controlled trial of CDP571 anti-body to tumour necrosis factor-α in Crohn's disease. Lancet 1997; 349: 521-4.
- Anonymous. CDP 571: anti-TNF monoclonal antibody, BAY 103356, BAY W 3356, Humicade. Drugs R D 2003; 4: 174–8.
- Sandborn WJ, et al. CDP571, a humanised monoclonal antibody to tumour necrosis factor α, for moderate to severe Crohn's disease: a randomised, double blind, placebo controlled trial. Gut 2004; 53: 1485-93.
- 6. Mamula P, et al. CDP571, a humanized anti-tumor necrosis factor-alpha monoclonal antibody in pediatric Crohn's disease. *Inflamm Bowel Dis* 2004; **10:** 723–30.
- Feagan BG, et al. A randomized, double-blind, placebo-controlled trial of CDP571, a humanized monoclonal antibody to tumour necrosis factor-alpha, in patients with corticosteroid-dependent Crohn's disease. Aliment Pharmacol Ther 2005; 21: 373-84
- 8. Feagan BG, et al. CDP571, a humanized monoclonal antibody to tumour necrosis factor-alpha, for steroid-dependent Crohn's disease: a randomized, double-blind, placebo-controlled trial. Aliment Pharmacol Ther 2006; **23:** 617–28.

Sepia

Profile

Sepia is the dried inky secretion of the cuttle fish.

Homoeopathy. Sepia has been used in homoeopathic medicines under the following names: Sepia officinalis.

Serotonin

Enteramina; Enteramine; 5-Hidroxitriptamina; 5-HT; 5-Hydroxytryptamine; Serotonina. 3-(2-Aminoethyl)-1H-indol-5-ol. Серотонин

 $C_{10}H_{12}N_2O = 176.2.$ CAS — 50-67-9.

Serotonin, which is synthesised in the body from the essential amino acid tryptophan, is found in the brain, blood platelets, and throughout the gastrointestinal tract. It acts as a biochemical mediator and its roles include involvement in CNS neurotransmission, haemostasis, vascular spasm, and gastrointestinal motility. Abnormalities within the serotonin system are associated with a variety of disorders and many drugs have been developed to manipulate serotonin concentrations.

Serotonin itself may be of value in the treatment of posthypoxic myoclonus (p.470). Concentrations of endogenous serotonin may be increased through synthesis and serotonin precursors have been given for the treatment of depression (see Oxitriptan, p.414 and Tryptophan, p.427).

Some antidepressants increase serotonin concentrations by inhibiting the metabolism of monoamine oxidase type A, the enzyme that deaminates serotonin. Examples include the older non-selective irreversible inhibitors of monoamine oxidase types A and B (MAOIs) such as phenelzine (p.415), and the newer selective reversible inhibitors of monoamine oxidase type A (RIMAs) such as moclobemide (p.411).

Drugs that inhibit the neuronal reuptake of serotonin after release (and thus potentiate its action) are also used in the treatment of depression. They include tricyclic antidepressants such as amitriptyline (p.376), the selective serotonin reuptake inhibitors (SS-RIs) such as fluoxetine (p.391), and selective serotonin and noradrenaline reuptake inhibitors (SNRIs) such as venlafaxine (p.427). Some SSRIs and SNRIs are also used in the management of anxiety disorders, and SSRIs have been tried in the management of premature ejaculation. Sibutramine (p.2163) is an SNRI used in the management of obesity.

Serotonin receptors, a major site of drug action, are classified by structure and function into seven families: 5-HT₁, 5-HT₂, 5-HT₃, 5-HT₄, 5-HT₅, 5-HT₆, and 5-HT₇ with each family having further subtypes. Consequently, drugs acting on serotonin receptors exhibit widely differing chemical structures and diverse pharmacological activities depending on which receptor subtype they act on and whether they act as agonists or antagonists. Serotonin receptor activity is complex and it is possible for the same disorder to be treated by both serotonin agonists or antagonists. For example, serotonin antagonists used in the treatment of migraine include the older ergot-derived compounds such as methysergide (p.623) and metergoline (p.2343) whereas the newer triptans such as sumatriptan (p.625) are selective 5-HT₁ agonists. Buspirone (p.965) is a 5-HT $_{1A}$ partial agonist used in the treatment of anxiety disorders. Cisapride (p.1720) is a 5-HT $_4$ agonist used for gastrointestinal disorders. 5-HT_{2C} agonists are under investiga-

Many different drugs act as serotonin antagonists. They include sedating antihistamines such as carbinoxamine (p.570), cyproheptadine (p.575), methdilazine (p.585), and promethazine (p.588) used for allergic conditions. Some antiserotonergic antihistamines such as cyproheptadine, oxetorone (p.624), and pizotifen (p.624) are also used in the management of migraine. Antagonists specific for the 5-HT $_{\rm 2A/2C}$ receptor include the antihypertensive ketanserin (p.1320), the antipsychotic risperidone (p.1024), and the antidepressant trazodone (p.424). The antipsychotic clozapine (p.981) also has antiserotonergic activity at the 5-HT_{2A/2C} receptor in addition to its other properties. On-dansetron (p.1756) is a 5-HT₃ antagonist used for chemotherapyinduced emesis and postoperative nausea and vomiting.

Drugs with other mechanisms of action involving serotonin systems include fencionine, an inhibitor of serotonin synthesis that has been used in the treatment of carcinoid syndrome. Reserpine (p.1387) depletes serotonin stores in the brain, heart, and many other organs and has been used in hypertension and psychoses. Fenfluramine (p.2156) and its isomer dexfenfluramine (p.2154) appear to stimulate the release of serotonin and selectively inhibit its reuptake resulting in increased CNS serotonin concentrations; both were formerly used in the treatment of obesity.

Some hallucinogenic drugs of abuse such as bufotenine (p.2270) and lysergide (p.2335) have serotonergic properties.

Serotonin also occurs in stinging nettles (Urtica dioica) (p.2409), bananas, and other fruit, and in the stings of wasps and scorpions.

♦ References

- Hindle AT. Recent developments in the physiology and pharma-cology of 5-hydroxytryptamine. Br J Anaesth 1994; 73: 395–407.
- Hoyer D, et al. International Union of Pharmacology classifica-tion of receptors for 5-hydroxytryptamine (serotonin). Pharmacol Rev 1994; 46: 157-203.

Serrapeptase (rINN)

Serrapeptasa; Serrapeptasum; Serrapeptidase; Serratia Extracel-Iular Proteinase; Serratiopeptidase.

Серрапептаза

CAS — 37312-62-2; 95077-02-4.

Pharmacopoeias. In Jpn.

Serrapeptase is a proteolytic enzyme derived from Serratia spp. It has been taken orally for its supposed action in relieving inflammation and oedema associated with conditions such as trauma, infection, respiratory-tract congestion, or chronic venous insufficiency, in usual doses of 5 to 10~mg (10~000~to~20~000~units) up to three times daily.

◊ References.

- Tachibana M, et al. A multi-centre, double-blind study of serrapeptase versus placebo in post-antrotomy buccal swelling. Pharmatherapeutica 1984; 3: 526–30.
- Paparella P, et al. Serratia peptidase and acute phase protein behavior following vaginal hysterectomy: results of a randomized double-blind, placebo-controlled trial. Curr Ther Res 1989; 45: 664-76.
- Shimizu H, et al. A case of serratiopeptidase-induced subepidermal bullous dermatosis. Br J Dermatol 1999: 141: 1139–40.
- Nakamura S, et al. Effect of the proteolytic enzyme serrapeptase in patients with chronic airway disease. Respirology 2003; 8: 316–20.

Preparations

Proprietary Preparations (details are given in Part 3)

Arg.: Danzer, Chile: Danzer, Ger.: Dazer, Ger.: Anifazym; Gr.: Brasan; Enziflur†, Eze†, Lergan†, Verolin†, Hong Kong: Danzen; Guizen, India: Bidanzen; Gipzen, Flanzen; Infladase; Kineto; Seraim; Serato—M: Ital.: Danzen; Dpn: Dasen; Maloysia: Danzen; Opter, Flanzen; Fortz: Aniflazime; Singapore: Danzen; Korzen†; Serrazyme; Sinsia; Unizen†, Thdi.: Dailat; Danzen; Danzen; Danzen; Danzen; Danzen; Chacker; Kerrared; Serrados; Serrano; Serrao; Serrapep; Serrason; Serrin; Sumidin; Unizen.

Multi-ingredient: *India:* Cipzen D; Cipzen N; Diser; Flanzen-D; Nimulid SP; Serato-M Forte†; *Indon.:* Dansera; Flavin; Nutriflam.

Sesame Oil

Aceite de Ajonjoli; Benne Oil; Gingelly Oil; Oleum Sesami; Refined Sesame Oil; Seesamiöljy; Sésame, huile de; Sesami oleum; Sésamo, aceite de; Sesamolja; Sezamový olej; Sezamų aliejus; Szezámolaj; Teel Oil.

CAS — 8008-74-0.

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

Ph. Eur. 6.2 (Sesame Oil, Refined; Sesami Oleum Raffinatum). The fatty oil obtained from the ripe seeds of *Sexamum indicum* by expression or extraction and subsequent refining. It may contain a suitable antoxidant. It is a clear, light yellow, almost colourless liquid. It solidifies to a soft mass at about -4° . Practically insoluble in alcohol; miscible with petroleum spirit. Store in well-filled, airtight containers. Protect from light. Refined sesame oil for use in the manufacture of parenteral dosage forms should be stored under an inert gas in airtight containers.

USNF 26 (Sesame Oil). The refined fixed oil obtained from the seed of one or more cultivated varieties of *Sesamum indicum* (Pedaliaceae). It may contain suitable antoxidants. A pale yellow, practically odourless, oily liquid. Slightly soluble in alcohol; miscible with carbon disulfide, with chloroform, with ether, and with petroleum spirit. Store in airtight containers at a temperature not exceeding 40°. Protect from light.

Profile

Sesame oil has been used in the preparation of liniments, plasters, ointments, and soaps. Because it is relatively stable, it is a useful solvent and vehicle for parenteral products. Hypersensitivity reactions have been seen.

Adverse effects. References to hypersensitivity reactions ¹⁻⁷ associated with sesame, and subcutaneous nodules ⁸ after injection of the oil.

- Kanny G, et al. Sesame seed and sesame seed oil contain masked allergens of growing importance. Allergy 1996; 51: 952–7.
- Stern A, Wuthrich B. Non-IgE-mediated anaphylaxis to sesame. Allergy 1998; 53: 325–6.
- Pecquet C, et al. Immediate hypersensitivity to sesame in foods and cosmetics. Contact Dermatitis 1998; 39: 313.
- Asero R, et al. A case of sesame seed-induced anaphylaxis. Allergy 1999; 54: 526–7.
- Dalal I, et al. The pattern of sesame sensitivity among infants and children. Pediatr Allergy Immunol 2003; 14: 312–16.
- Agne PS, et al. Sesame seed allergy in children. Allerg Immunol (Paris) 2004; 36: 300–305.
 Gangur V, et al. Sesame allergy: a growing food allergy of global proportions? Ann Allergy Asthma Immunol 2005; 95: 4–11.
- Darsow U, et al. Subcutaneous oleomas induced by self-injection of sesame seed oil for muscle augmentation. J Am Acad Dermatol 2000; 42: 292–4.

Preparations

Proprietary Preparations (details are given in Part 3) *Canad.*: Rhinaris Nozoil; *UK*: Noseeze.

Multi-ingredient: Austral.: Snor-Away†; **Ger.:** GeloSitin; **NZ:** Snorenz; **UK:** Goodnight StopSnore; Snor-Away.

Shark-liver Oil

Profile

Shark-liver oil is the fixed oil extracted from the liver of various species of shark and is used in preparations for anorectal disorders. It has been used as a source of vitamin A.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Sperti Preparacion Η†; Fr.: Alkocean†; Pol.: Ecomer; Ekogal†; Selamer; Rus.: Relief Advance (Ρεννφ Αдванс); UK: Immutone; Venez.: Sperti†; Vitaburon†.

Multi-ingredient: Arg.: Sperti Plus Preparation H; Austral.: Preparation H†; Austral: Sperti Praparation H; Canad.: Preparation H; Chile: Sperti Preparation H; Cz.: Preparation H; Hr. Sperti Preparation H; Hr. Sperti Preparation H; Hr.: Preparation H; Israel: Preparation H; Postamer's Port.: Sperti Preparation H†; Prostamer'; Port.: Sperti Preparacao H; Rus.: Preparation H†; Prostamer'; Port.: Sperti Preparacao H; (Peλμφ) Yokspa); S.Afr.: Preparation H; Singopore: Preparation H; Spain: Preparation H; Switz.: Sperti Preparation H; Thai.: Preparation H; USA: Hem-Prep; Medicone†; Preparation H; USA: Hem-Prep; Medicone†; Preparation H; Getacaine; Rectagene Medicated Balm; Wyanoids Relief Factor; Venez.: Bargonil.

Shellac

E904; Goma laca; Gomme Laque; Gommes laques; Lacca; Lacca in Tabulis; Schellack; Šelak; Šelakas; Sellak; Shellack; Shellakka. CAS — 9000-59-3.

Pharmacopoeias. In *Eur.* (see p.vii). Also in *USNF. Jpn* includes Purified Shellac and White Shellac (Bleached).

Ph. Eur. 6.2 (Shellac). It is obtained by purification of the resinous secretion of the female insect *Kerria lacca* (Kerr) Lindinger (*Laccifer lacca* Kerr). There are 4 types of shellac depending on the nature of the treatment of crude secretion (seedlac): Waxcontaining Shellac; Bleached Shellac; Dewaxed Shellac; and Bleached, Dewaxed Shellac.

Brownish-orange or yellow, shining, translucent, hard or brittle more or less thin flakes (Wax-containing Shellac; Dewaxed Shellac), or a creamy-white or brownish-yellow powder (Bleached Shellac; Bleached, Dewaxed Shellac).

Practically insoluble in water. With dehydrated alcohol it gives a more or less opalescent solution (Wax-containing Shellac; Bleached Shellac) or a clear solution (Dewaxed Shellac; Bleached, Dewaxed Shellac). When warmed, it is sparingly soluble or soluble in alkaline solutions. Protect from light. Store Bleached Shellac and Bleached, Dewaxed Shellac at a temperature not exceeding 15°.

USNF 26 (Shellac). It is obtained by purification of lac, the resinous secretion of the insect Laccifer lacca kerr (Coccidae). There are 4 varieties: Orange Shellac, Dewaxed Orange Shellac, Regular Bleached (White) Shellac, and Refined Bleached Shellac. Orange Shellac occurs as thin, hard, brittle, transparent, pale lemon-yellow to brownish-orange flakes, having little or no odour. Bleached Shellac occurs as opaque, amorphous, cream to yellow granules or coarse powder, having little or no odour. Insoluble in water; very slowly soluble in alcohol, 85 to 95% (w/w); soluble in ether, 13 to 15%, in petroleum spirit, 2 to 6%, in benzene, 10 to 20%, and in aqueous solutions of ethanolamines, alkalis, and borax; sparingly soluble in turpentine oil. Store preferably at a temperature not exceeding 8°.

Profile

Shellac is used as an enteric coating for pills and tablets, but disintegration time has been reported to increase markedly on storage.

Preparations

USNF 26: Pharmaceutical Glaze.

Shepherd's Purse

Bolsa de pastor; Bourse à pasteur; Capsella; Herba Bursae Pastoris; Shepherds Burse Herb.

Pharmacopoeias. In Fr.

Profile

Shepherd's purse, the aerial parts of Capsella bursa-pastoris (Thlaspi bursa-pastoris) (Cruciferae) has antihaemorrhagic and astringent properties. It is used to prevent or arrest bleeding, and has been specifically used for menorrhagia. It is also used for urinary-tract disorders and diarrhoea.

Homoeopathy. Shepherd's purse has been used in homoeopathic medicines under the following names: Capsella bursapastoris; Thlaspi bursa pastoris; Capsella; Thal. b. p.

Preparations

Proprietary Preparations (details are given in Part 3) **Gen.**: Styptysat.

Multi-ingredient: Austral.: Capsella Complex; Austria: Menodoron; Fr.: Histo-Fluine P; Ger.: Rhoival†, Pol.: Klimax†, Prostapol; Uroprost; S.Afr.: Menodoron; Spain: Proctosor†; UK: Antitis; Sciargo.

Siam Benzoin

Benjoin du Laos; Benjuí de Siam; Bensoe, Siam; Bentsoe, Siam; Benzoe tonkinensis; Benzoino derva; Benzoová pryskyřice siamská

CAS — 9000-72-0.

Pharmacopoeias. In *Chin.* and *Eur.* (see p.vii). Also in some pharmacopoeias under the title benzoin and should not be con-

fused with Sumatra benzoin. Jpn and US allow both Siam benzoin and Sumatra benzoin under the title Benzoin.

Ph. Eur. 6.2 (Benzoin, Siam). The resin obtained by incising the trunk of *Syrax tonkinensis*. It has a characteristic odour of vanilin and contains 45.0 to 55.0% of total acids, calculated as benzoic acid, and with reference to the dried drug. Protect from light. USP 31 (Benzoin). A balsamic resin from *Styrax tonkinensis*, or other species of the *Anthostyrax* section of the genus *Styrax* (Styracaceae). It yields not less than 90% of alcohol-soluble extractive. It occurs as pebble-like tears of variable size and shape, compressed, yellowish-brown to rusty brown externally, milky white on fracture, separate or very slightly agglutinated, hard and brittle at ordinary temperatures but softened by heat. It has an agreeable, balsamic, vanilla-like odour.

Profile

Siam benzoin has been used similarly to Sumatra benzoin (p.2394). It has also been used as a preservative and was formerly used in the preparation of benzoinated lard.

Preparations of Sumatra and Siam benzoins are used in aromatherapy.

Preparations

USP 31: Compound Benzoin Tincture; Podophyllum Resin Topical Solu-

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: Braz.: Dermol†; Fr.: Balsolene; Borostyrol; Homeoplasmine; Inotyol†; Israel: Inotyol; Ital.: Ondroly-A†; Switz.: Borostyrol NH

Siberian Ginseng

Ciwujia; Eleuterokokový kořen (eleutherococcus); Eleuterokokų šaknys (eleutherococcus); Eleuthero; Eleutherococci radix (eleutherococcus); Eleuthérocoque (eleutherococcus); Korzeń eleuterokoka (eleutherococcus); Nysk rot (eleutherococcus); Tajgagyökér (eleutherococcus); Venäjänjuuri (eleutherococcus).

NOTE. The name Russian Ginseng has been applied to *Eleuthero-coccus senticosus*.

The name Ginseng usually refers to *Panax ginseng* and related species (see p.2312).

Some material supplied as Siberian ginseng may be *Periploca sepium* (Asclepiadaceae), a plant unrelated to *Eleutherococcus senticosus*, due to the similarity of the Chinese names for these plants.

Pharmacopoeias. In Chin., Eur. (see p.vii), and US.

Ph. Eur. 6.2 (Eleutherococcus; Eleutherococci Radix). The dried, whole or cut underground organs of *Eleutherococcus senticosus*. It contains not less than 0.08% for the sum of eleutheroside B and eleutheroside E.

USP 31 (Eleuthero). The dried rhizome with roots of *Eleutherococus senticosus* (Araliaceae) (*Acanthopanax senticosus*) (Araliaceae). It contains not less than 0.08% of the sum of eleutheroside B and eleutheroside E, calculated on the dried basis. Protect from light.

Profile

Siberian ginseng is reported to enhance natural resistance and to improve performance under stress. It is used similarly to ginseng (*Panax ginseng*) (see p.2312) although the constituents of the two herbs are different. It is also used in traditional Chinese medicine.

Reviews.

 Davydov M, Krikorian AD. Eleutherococcus sentiosus (Rupr. & Maxim.) Maxim. (Araliaceae) as an adaptogen: a closer look. J Ethnopharmacol 2000; 72: 345–93.

Adverse effects. Thalamic infarction occurred in a 26-year-old man who had taken oral high-energy dietary supplements containing Siberian ginseng daily for about a year during a vigorous training programme for a marathon. He had taken about 1.5 to 2 g of Siberian ginseng daily; small amounts of caffeine were also contained in the preparations. In the absence of other aetiological factors, it was proposed that prolonged daily use of Siberian ginseng in combination with caffeine and vigorous exercise was responsible for the stroke.

 Polenakovik S. Dietary supplements and stroke. Mayo Clin Proc 2005; 80: 1240–1.

Interactions. For a report of raised serum-digoxin concentrations in a patient taking *digoxin* and Siberian ginseng, see Interference with Digoxin Assays, p.1260.

Preparations

Proprietary Preparations (details are given in Part 3)

Canad.: Benylin Energy Boosting†; Cz.: Eleutherosan†; Gen: Eleu; Eleu-Kokk; Eleu-Twardypharm†; Eleutheroforce; Eleutherokokk†; Konstitutin; Lebensenergie-Kapseln†; Lomavital; Vital-Kapseln†; Pol.: Immunostim; Syberian; Spain: Fitokey Eleuterococo; UK: Elagen.

Multi-ingredient: Arg.: Sigmafem; Austral.: Astragalus Complex; Bacopa Complex; Bioglan Ginsynergy; Gingo A†; Ginkgo Biloba Plus†; Medinat Esten†; Tyrosenţi; Chile: Gingo-Ther; Indon.: Resimax; Tripote; Ital.: Fon Wan Eleuthero†; Philipp: Immuvit Jamieson Total Energy Pol.: Tripoter; Spain: Energysor†; Esforza†; Natusor Low Blood Pressure†; Tonimax