Preparations

USP 31: PEG 3350 and Electrolytes for Oral Solution.

Proprietary Preparations (details are given in Part 3)

Austria: DrinkaLax; MixaLax; ***Belg.:*** Forlax; ***Cz.:*** Forlax; ***Fr.:*** Forlax; ***Ger.:*** Forlax; Glandomed; Laxofalk; ***Gr.:*** Tanilas; Transorbin†; ***Hong Kong:*** Forlax; ***Hung.:*** Forlax; ***Israel:*** Peglax; ***Ital.:*** Onlipeg; Paxabel; Pergidal; ***Malaysia:*** Forlax; ***Mex.:*** Contumax; ***Neth.:*** Forlax; ***Pol.:*** Forlax; Prolaxatan; ***Port.:*** Forlax; Philenterol; Transipeg; ***Rus.:*** Forlax (Форлакс); Polyoxidin (Полиоксидин); ***Singapore:*** Forlax; ***Swed.:*** Forlax; ***Thai.:*** Forlax; ***Turk.:*** Transipeg; ***UK:*** Idrolax†; ***USA:*** GlycoLax; MiraLax.

Multi-ingredient: ***Arg.:*** Adital; Barex; Irix Lagrimas; Systane; Transipeg; Visine Lagrimas; Visine Plus; ***Austral.:*** Colonic Lavage Powder†; Colonlytely; Colonprep†; Glycoprep; Glycoprep-C; Movicol; Prep Kit-C; Visine Advanced Relief; Visine Revive†; Visine True Tears†; ***Austria:*** Klean-Prep; Movicol; Transipeg; ***Belg.:*** Colofort; Colopeg; Delpeg; Endofalk; Endopeg; Klean-Prep; Movicol; Precosol†; Transipeg; ***Braz.:*** Muvinlax; NuLytely; ***Canad.:*** CoLyte; GoLytely; Klean-Prep; Peglyte; Rhinaris; Salinol†; Secaris; Systane; Visine Advance Triple Action; Visine Cool; ***Chile:*** Systane; ***Cz.:*** Fortrans; Movicol; ***Denm.:*** Klean-Prep†; Ledermix†; Movicol; ***Fin.:*** Colonsoft; Colonsteril; Klean-Prep; Movicol; ***Fr.:*** Colopeg; Fortrans; Klean-Prep; Movicol; Moviprep; SST; Systane; Transipeg; ***Ger.:*** Colonorm N†; Delcoprep; Endofalk; Isomol; Klean-Prep; Movicol; Oralav; ***Gr.:*** Fortrans; Izetafin; Klean-Prep; ***Hong Kong:*** Clinac OC; Hypotears; Klean-Prep; Movicol; Systane; Visine Moisturizing; ***Indon.:*** Laxarec; Microlax; Visine Extra; ***Irl.:*** Klean-Prep; Movicol; ***Israel:*** Meroken New; ***Ital.:*** Hypotears; Isocolan; Klean-Prep; Macro-P; Movicol; Selg; Selg-Esse; Systane; ***Malaysia:*** Fortrans; Hypotears; Systane; ***Mex.:*** NuLytely; Systane; Visine Extra; ***Neth.:*** Colofort; Eleprep; Endofalk; Klean-Prep; Movicolon; Transipeg; ***Norw.:*** Klean-Prep; Laxabon; Movicol; ***NZ:*** Glycoprep†; Klean-Prep; Movicol; Visine Advanced Relief; ***Philipp.:*** Moisturizing All Clear; Systane; Visine Refresh; ***Pol.:*** Fortrans; ***Port.:*** Endofalk; Fortrans; Klean-Prep; Movicol; Pecol; ***Rus.:*** Fortrans (Фортранс); Transipeg (Транзипег); ***S.Afr.:*** GoLytely; Klean-Prep; Movicol; ***Singapore:*** Fortrans; Klean-Prep; Movicol; Systane; ***Spain:*** Casenglicol; Evacuante; Klean-Prep; Movicol; Omesal; ***Swed.:*** Klean-Prep†; Laxabon; Movicol; ***Switz.:*** Colo-Sol; Cololyt; Fordtran; Gleitmittel†; Hypotears; Isocolan; Klean-Prep; Movicol; Transipeg; ***Thai.:*** Niflec; Systane; Unison Enema; ***Turk.:*** Movicol; ***UK:*** Hypotears†; Klean-Prep; Laxido; Movicol; Moviprep; SST; ***USA:*** Advanced Relief Visine; Aquasite†; CoLyte; GoLytely; HalfLytely; Hypotears; MoviPrep; Nu-Tears II; NuLytely; Numoisyn; OCL; Tetrasine Extra†; TriLyte; Visine Moisturizing†; Visine Pure Tears; Visine Tears; ***Venez.:*** Lic Polvo†; Systane.

Magnesium Glutamate Hydrobromide

Glutamato magnésico, hidrobromuro de; Magnesium α-Aminoglutarate Hydrobromide; Magnesium Bromoglutamate.

$(C_5H_8NO_4)_2Mg,HBr$ = 397.5.

Profile

Magnesium glutamate hydrobromide has been used as a sedative and hypnotic in the treatment of insomnia, neuroses, and behavioural disorders. The use of bromides is generally deprecated (see p.2269).

Preparations

Proprietary Preparations (details are given in Part 3)

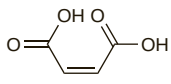
Multi-ingredient: ***Chile:*** Gamalate B6; ***Spain:*** Cefabol; Gamalate B6; Psicosoma Solucion.

Maleic Acid

Acide maléique; Acidum maleicum; (*Z*)-Butenedioic Acid; Kwas maleinowy; Kyselina maleinová; Maleico, ácido; Maleiinihappo; Maleino rūgštis; Maleinsav; Maleinsyra; Toxilic Acid. *cis*-Butenedioic acid.

$C_2H_2(CO_2H)_2$ = 116.1.

CAS — 110-16-7.



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

Ph. Eur. 6.2 (Maleic Acid). A white or almost white, crystalline powder. Freely soluble in water and in alcohol. A 5% solution in water has a pH of less than 2. Store in glass containers. Protect from light.

USNF 26 (Maleic Acid). A white crystalline powder. Freely soluble in water and in alcohol; sparingly soluble in ether. Store in airtight glass containers. Protect from light.

Profile

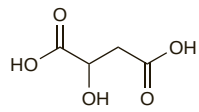
Maleic acid is used in the preparation of Ergometrine Injection (BP 2008) and Ergometrine and Oxytocin Injection (BP 2008).

Malic Acid

Acide Malique; Acidum malicum; Acidum Malicum Racemicum; Äppelsyra; Apple Acid; E296; Hydroxysuccinic Acid; Kyselina jablečná racemická; Málico, ácido; Obuolių rūgštis; Omenahappo. (2*RS*)-2-Hydroxybutanedioic acid.

$C_4H_6O_5$ = 134.1.

CAS — 6915-15-7 (malic acid); 636-61-3 ((+)-malic acid); 97-67-6 ((−)-malic acid); 617-48-1 ((±)-malic acid).



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

Ger. also includes the *S*-form ((−)-malic acid).

Ph. Eur. 6.2 (Malic Acid). A white or almost white, crystalline powder. Freely soluble in water and in alcohol, sparingly soluble in acetone.

USNF 26 (Malic Acid). A white or practically white, crystalline powder or granules. Very soluble in water; freely soluble in alcohol.

Profile

Malic acid is used in pharmaceutical formulations as an acidifier, flavour, and as an alternative to citric acid in effervescent powders. It is used with butylated hydroxytoluene as an antioxidant in vegetable oils. It is used topically with benzoic acid and salicylic acid for desloughing of ulcers, burns, and wounds, and systemically with arginine (p.1928) in preparations for the treatment of liver disorders. Pastilles containing malic acid are also used in the management of dry mouth (p.2140).

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***Austria:*** Acerbine; Leberinfusion; Rocmaline; ***Chile:*** Secand; ***Fin.:*** Xerodent; ***Fr.:*** Rocmaline; Sphingogel†; Squaphane; SST; ***Hung.:*** Rocmalat†; ***Ital.:*** Keraflex; ***Neth.:*** Sterofundin M; ***Norw.:*** Xerodent; ***S.Afr.:*** Aserbine; ***Spain:*** Acerbiol; ***Swed.:*** Xerodent; ***Switz.:*** Acerbine†; ***UK:*** Aserbine†; Hydrotab; Salivix; SST; ***USA:*** Numoisyn; ***Venez.:*** Lecivar Plus.

Mallow

Erdei mályvavirág (mallow flower); Květ slézu lesního (mallow flower); Liść ślazu (mallow leaf); Malvablomma (mallow flower); Malvae folium (mallow leaf); Malvae sylvestris flos (mallow flower); Malvenblätter (mallow leaf); Malvenblüten (mallow flower); Mauve des Bois (*Malva silvestris*); Mauve, feuille de (mallow leaf); Mauve, fleur de (mallow flower); Metsämalvankukka (mallow flower); Miškinių dedešvų žiedai (mallow flower).

Pharmacopoeias. *Eur.* (see p.vii) includes the dried flowers. *Swiss* includes Mallow Leaf (Malvae Folium) which may be *Malva sylvestris* or *M. neglecta*.

Ph. Eur. 6.2 (Mallow Flower; Malvae sylvestris flos). The whole or fragmented dried flower of *Malva sylvestris* or its cultivated varieties. Protect from light.

Profile

Mallow flower and leaf act as demulcents and are ingredients of herbal remedies for coughs and cold symptoms. Mallow flower is used to enhance the colour of herbal teas and other foodstuffs. Mallow is also included in herbal remedies for gastrointestinal disorders.

Preparations

Proprietary Preparations (details are given in Part 3)

Braz.: Mictasol; ***Cz.:*** Slezovy Kvet; ***Switz.:*** Malvedrin.

Multi-ingredient: ***Arg.:*** Acnetrol; KW; Mictasol Azul; Prurigel; ***Austral.:*** Neo-Cleanse; ***Austria:*** Midro Tee; ***Belg.:*** Mictasol-P; Mictasol†; ***Braz.:*** Malvatricin Natural Soft; Malvatricin Pastilhas; Malvatricin Pronto; Malvatricin Solucao para diluir; Malvatricin Spray; Malvodon; Mictasol com Sulfa†; Peitoral Angico Pelotense†; ***Canad.:*** Original Herb Cough Drops; Swiss Herb Cough Drops; ***Cz.:*** Erkaltungstee†; Magen- und Darmtee N†; ***Fr.:*** Alkagin; Erygine; Mediflor Tisane Hepatique No 5; Mictasol; Mucogyne; ***Israel:*** Midro-Tea; ***Ital.:*** Alkagin; Dentaton; Glicerolax; Iridil; Microclismi Marco Viti; Microclismi Sella; Mictasol Bleu†; Mictasone; Neoderma 47; Nevril; Ninfagin; Piodermina; Proctonet†; ***Port.:*** Alkagin; Midro†; ***Rus.:*** Herbion Plantain Syrup (Гербион Сироп Подорожника); ***Switz.:*** Malvedrin; Malveol.

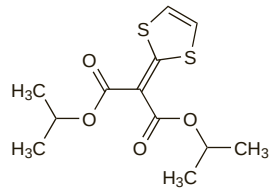
Malotilate *(USAN, rINN)*

Malotilato; Malotilatum; NKK-105. Diisopropyl 1,3-dithiole-$\Delta^{2,}$-malonate.

Малотилат

$C_{12}H_{16}O_4S_2$ = 288.4.

CAS — 59937-28-9.



Profile

Malotilate has been investigated for its reported protective effects on liver function in patients with chronic hepatic disease.

◊ References.

1. A European Multicentre Study Group. The results of a randomized double blind controlled trial evaluating malotilate in primary biliary cirrhosis. *J Hepatol* 1993; **17:** 227–35.

Mammalian Tissue Extracts

Mamíferos, extractos tisulares.

Экстракты из Млекопитающей Ткани

Profile

Many medicinal preparations with definite pharmacological activity and valid clinical uses are of mammalian origin and are described under their appropriate monographs—for example, calcitonin, corticotropin, hydrocortisone (cortisol), some enzymes, heparin, insulin, parathyroid hormone, pituitary hormones, some sex hormones, and thyroid.

Other preparations of animal origin have been promoted for various disorders. Evidence of pharmacological activity is generally lacking and such preparations are often of doubtful benefit.

Preparations

Proprietary Preparations (details are given in Part 3)

Arg.: Bros†; Raw Prostate†; Sigmatrofic; Solcoseryl; ***Austria:*** Actovegin; Ambotonin; Apoderm; Cerebrolysin; Cerebrotonin; Enzynorm; Medoenzym; Solcoseryl; ***Braz.:*** Acrosin†; Sukepar†; ***Chile:*** Renacenz; ***Cz.:*** Solcoseryl; ***Fr.:*** Eurobiol; ***Ger.:*** Actihaemyl; Actovegin; Cerebrolysin; Chrysocor†; NeyFegan (Revitorgan-Dilutionen Nr 26)†; NeyFegan-Solubile†; NeyPsorin (Revitorgan-Dilutionen Nr 5)†; Solcosplen†; Voltil†; ***Hong Kong:*** Actovegin; Cerebrolysin; Leviden; Solcoseryl; ***Hung.:*** Actovegin; Raveron†; Sirepar†; ***India:*** Placentrex; ***Indon.:*** Solcoseryl; ***Ital.:*** Cellulin Retinale; Liposom; ***Jpn:*** Solcoseryl; ***Malaysia:*** Solcoseryl; ***Mex.:*** Reposton; ***Neth.:*** Solcoseryl†; ***Philipp.:*** Solcoseryl; ***Pol.:*** Solcoseryl; ***Rus.:*** Actovegin (Актовегин); Cerebrolysin (Церебролизин); Cortexin (Кортексин); Prostacor (Простакор)†; Prostatilen (Простатилен); Retinalamin (Ретиналамин); Sirepar (Сирепар); Solcoseryl (Солкосерил); Vitaprost (Витапрост); ***S.Afr.:*** Enzynorm†; ***Singapore:*** Solcoseryl; ***Spain:*** Solcoseryl; ***Switz.:*** Solcoseryl; ***Thai.:*** Actovegin†; Cerebrolysin; Hepavit; Sirepar; Solcoseryl; ***USA:*** Kutapressin†.

Multi-ingredient: ***Arg.:*** ITE B12 Forte; Melagel; Pat-Chobet; Solcoseryl Dental†; ***Austria:*** Bilatin; Intestinol; Solcoseryl Dental; Wobe-Mugos; ***Belg.:*** Grains de Vals; ***Braz.:*** Boldopeptan†; Digestron†; Extrato Hepatico Composto; Extrato Hepatico Vitaminado†; Fol Sang; Hecrosine B12†; Hematiase B12; Hemofer†; Hormo Hepatico†; Lisan†; Lisotox; Olohepat†; Panvitrop; Xantina B12†; Xantinon B12; ***Canad.:*** ratio-Heracline; ***Cz.:*** Cerebrolysin; ***Ger.:*** Enzym-Harongan; Enzynorm f; Factor AF2; Geriaplasma†; Hevert-Enzym Comp; Lomazell forte N†; NeyTumorin (Revitorgan-Lingual Nr 66)†; NeyTumorin N (Revitorgan-Dilutionen N Nr 66)†; poliomyelan†; Ribo-Wied†; Solcoseryl Dental; tactu-nerval†; ***Hong Kong:*** Solcoseryl Dental; ***Hung.:*** Dipankrin; Neogranormon; ***India:*** Hepatoglobine; Iberol; Livogen†; Plastules; ***Indon.:*** Bioplacenton; Centabio; LaktaFit; Moloco + B12; Solcoseryl Dental; ***Ital.:*** Biotrefon Plus; Gastro-Pepsin; ***Malaysia:*** Solcoseryl Dental; ***Mex.:*** Cholal Modificado; ***NZ:*** Movelat†; ***Philipp.:*** Godex; Solcoseryl Dental; ***Port.:*** Cerebrolysine; ***Rus.:*** Solcoseryl Dental (Солкосерил Дентальная); ***S.Afr.:*** Prohep; ***Singapore:*** Solcoseryl Dental; ***Spain:*** Hepacomplet B12 Triple†; Hepadif; Policolinosil; Rubrocortin†; ***Switz.:*** Solcoseryl Dentaire; Zymoplex†; ***Thai.:*** Solcoseryl Dental; Trinsicon†; ***UK:*** Hematinic; S.P.H.P.; ***USA:*** Feocyte; FeoGen; Geritonic; I-L-X.

Manuka

New Zealand Tea Tree.

Profile

The oil of manuka (*Leptospermum scoparium*) is used for its antimicrobial properties as an alternative to melaleuca oil (p.2338). It is also used in aromatherapy. Manuka honey has also been used as a wound dressing (p.1948).

◊ References.

1. Cooper RA, *et al.* The sensitivity to honey of Gram-positive cocci of clinical significance isolated from wounds. *J Appl Microbiol* 2002; **93:** 857–63.
2. Cooper RA, *et al.* The efficacy of honey in inhibiting strains of Pseudomonas aeruginosa from infected burns. *J Burn Care Rehabil* 2002; **23:** 366–70.
3. English HK, *et al.* The effects of manuka honey on plaque and gingivitis: a pilot study. *J Int Acad Periodontol* 2004; **6:** 63–7.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: ***UK:*** Antiac; Sinose.

Marjoram

Majoranae Herba; Marjolaine; Sweet Marjoram; Ziele majeranku.

NOTE. Distinguish from wild marjoram (see Oregano, p.2357).

Pharmacopoeias. In *Pol.*

Profile

The dried leaves and flowers of marjoram, *Origanum majorana* (*Majorana hortensis*) (Lamiaceae), and the essential oil obtained from them have antibacterial properties. They are used, either separately or in combination, in herbal remedies for a variety of disorders. Marjoram is also used as a culinary herb.

Marjoram oil is used in aromatherapy.

Preparations

Proprietary Preparations (details are given in Part 3)
Multi-ingredient: ***Austria:*** Menodoron; ***Fr.:*** Dystolise; ***Neth.:*** Luuf Verkoudheidsbalsem (voor babies); ***Pol.:*** Salviasept; ***S.Afr.:*** Menodoron; ***Spain:*** Natusor Sinulan†.

Mastic

Almáciga; Mastiche; Mastiksi; Mastix; Pistacijų mastika.

Pharmacopoeias. In *Eur.* (see p.vii).
Ph. Eur. 6.2 (Mastic). The dried resinous exudate obtained from stems and branches of *Pistacia lentiscus* var. *latifolius*. It contains a minimum of 1% v/w of essential oil, calculated with reference to the anhydrous drug. It should not be powdered.

Profile

Solutions of mastic in alcohol, chloroform, or ether have been used, applied on cotton wool, as temporary fillings for carious teeth. Compound Mastic Paint (BP 1980) was formerly used as a protective covering for wounds and to hold gauze in position.
Mastic gum has been used in the management of peptic ulcer disease.

Peptic ulcer disease. Mastic may be effective in the treatment of peptic ulcer disease possibly due to an antibacterial action on *Helicobacter pylori*.[1] However, one small clinical study found no benefit.[2]

1. Huwez FU, *et al.* Mastic gum kills Helicobacter pylori. *N Engl J Med* 1998; **339:** 1946. Correction. *ibid.*: **340:** 576 [dose].
2. Bebb JR, *et al.* Mastic gum has no effect on Helicobacter pylori load in vivo. *J Antimicrob Chemother* 2003; **52:** 522–3.

Preparations

Proprietary Preparations (details are given in Part 3)
UK: Mastika.

Meadowsweet

Älgört; Filipendulae ulmariae herba; Mesiangervo; Nat' tužebníku jilmového; Pelkinių vingiorykščių žolė; Queen of the Meadows; Reina de los prados; Reine des Prés; Reine des prés, sommité fleurie de; Spiraeae Herba; Ulmaria.

Pharmacopoeias. In *Eur.* (see p.vii).
Ph. Eur. 6.2 (Meadowsweet). The whole or cut, dried flowering tops of *Filipendula ulmaria* (*Spiraea ulmaria*). It contains a minimum of 0.1% v/w of steam-volatile substances (dried drug). It has an aromatic odour of methyl salicylate after crushing.

Profile

Meadowsweet is used in herbal medicine as a diuretic and in gastrointestinal and rheumatic disorders.
Homoeopathy. Meadowsweet has been used in homoeopathic medicines under the following names: Filipendula ulmaria; Spiraea ulmaria; Spiraea ulmaria ex herba; Filip. ul.

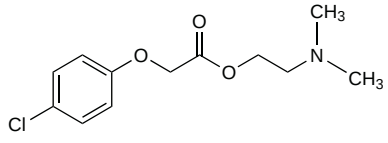
Preparations

Proprietary Preparations (details are given in Part 3)
Multi-ingredient: ***Cz.:*** Antirevmaticky Caj; ***Fr.:*** Drainuryl; Mediflor Tisane Antirhumatismale No 2; Mediflor Tisane No 4 Diuretique; Polypirine; ***Ital.:*** Flodolor; Neuralta Migren; Pik Gel; Sambuco (Specie Composta)†; Tiglio (Specie Composta)†; ***Mex.:*** Rodan; ***Pol.:*** Reumaherb; ***Spain:*** Dolosul†; Natusor Harpagosinol†; Natusor Renal†; ***Switz.:*** Urinex; ***UK:*** Acidosis; Indigestion Mixture; ***USA:*** Amerigel.

Meclofenoxate Hydrochloride *(BANM, rINNM)* ⊗

Centrophenoxine Hydrochloride; Clofenoxine Hydrochloride; Clophenoxate Hydrochloride; Deanol 4-Chlorophenoxyacetate Hydrochloride; Hidrocloruro de meclofenoxato; Meclofenoxane Hydrochloride; Méclofénoxate, Chlorhydrate de; Meclofenoxati Hydrochloridum. 2-Dimethylaminoethyl 4-chlorophenoxyacetate hydrochloride.

Меклофеноксата Гидрохлорид
$C_{12}H_{16}ClNO_3$,HCl = 294.2.
CAS — 51-68-3 (meclofenoxate); 3685-84-5 (meclofenoxate hydrochloride).
ATC — N06BX01.
ATC Vet — QN06BX01.



(meclofenoxate)

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

Profile

Meclofenoxate hydrochloride has been claimed to aid cellular metabolism in the presence of diminished oxygen concentrations. It has been given mainly for mental changes in the elderly, or after strokes or head injury.

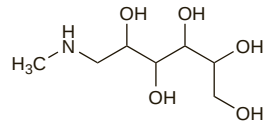
Preparations

Proprietary Preparations (details are given in Part 3)
Austria: Lucidril; ***Ger.:*** Cerutil†; Helfergin†; ***Hung.:*** Helfergin†.

Meglumine *(BAN, rINN)*

Meglumiini; Meglumin; Meglumina; Megluminas; Méglumine; Megluminum. *N*-Methylglucamine; 1-Methylamino-1-deoxy-D-glucitol.

Меглюмин
$C_7H_{17}NO_5$ = 195.2.
CAS — 6284-40-8.



Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), *Int.*, *Jpn*, and *US*.
Ph. Eur. 6.2 (Meglumine). A white or almost white, crystalline powder. Freely soluble in water; sparingly soluble in alcohol; practically insoluble in dichloromethane.
USP 31 (Meglumine). White to faintly yellowish-white, odourless crystals or powder. Freely soluble in water; sparingly soluble in alcohol.

Profile

Meglumine is an organic base used for the preparation of salts of organic acids including many used as contrast media.

Melaleuca Oil

Australian Tea Tree Oil; Melaleuca, aceite de; Mélaleuca, huile essentielle de; Melaleucae aetheroleum; Melaleucae Etheroleum; Mirtenių eterinis aliejus; Oleum Melaleucae; Silice kajeputu stříbavolistého; Tea Tree Oil; Teepuuõljy; Teträdolja.
CAS — 68647-73-4; 8022-72-8.

NOTE. Though the synonym Ti-tree Oil has been used for melaleuca oil (e.g. in BPC 1949), the name Ti-tree is also applied to species of *Cordyline* (Liliaceae) indigenous to New Zealand.

Pharmacopoeias. In *Eur.* (see p.vii).
Ph. Eur. 6.2 (Tea Tree Oil). The essential oil obtained by steam distillation from the foliage and terminal branchlets of *Melaleuca alternifolia*, *M. linariifolia*, *M. dissitiflora*, and/or other species of *Melaleuca*. It contains less than 7.0% aromadendrene, less than 15% cineole, 0.5 to 12.0% *p*-cymene, 0.5 to 4.0% limonene, 1.0 to 6.0% α-pinene, less than 3.5% sabinene, 5.0 to 13.0% α-terpinene, 10.0 to 28.0% γ-terpinene, minimum of 30% terpinen-4-ol, 1.5 to 8.0% α-terpineol, and 1.5 to 5.0% terpinolene.
A clear, mobile, colourless to pale yellow liquid with a characteristic odour. Store in well-filled airtight containers at a temperature not exceeding 25°. Protect from light.

Profile

Melaleuca oil has bactericidal and fungicidal properties and is used topically for various skin disorders. It is also used in aromatherapy.

◊ References.

1. Carson CF, *et al.* Efficacy and safety of tea tree oil as a topical antimicrobial agent. *J Hosp Infect* 1998; **40:** 175–8.
2. Allen P. Tea tree oil: the science behind the antimicrobial hype. *Lancet* 2001; **358:** 1245.
3. Satchell AC, *et al.* Treatment of interdigital tinea pedis with 25% and 50% tea tree oil solution: a randomized, placebo-controlled, blinded study. *Australas J Dermatol* 2002; **43:** 175–8.
4. Hammer KA, *et al.* In vitro activity of Melaleuca alternifolia (tea tree) oil against dermatophytes and other filamentous fungi. *J Antimicrob Chemother* 2002; **50:** 195–9.
5. Satchell AC, *et al.* Treatment of dandruff with 5% tea tree oil shampoo. *J Am Acad Dermatol* 2002; **47:** 852–5.
6. Koh KJ, *et al.* Tea tree oil reduces histamine-induced skin inflammation. *Br J Dermatol* 2002; **147:** 1212–7.
7. Mozelsio NB, *et al.* Immediate systemic hypersensitivity reaction associated with topical application of Australian tea tree oil. *Allergy Asthma Proc* 2003; **24:** 73–5.
8. Perrett CM, *et al.* Tea tree oil dermatitis associated with linear IgA disease. *Clin Exp Dermatol* 2003; **28:** 167–70.
9. Hammer KA, *et al.* Antifungal effects of Melaleuca alternifolia (tea tree) oil and its components on Candida albicans, Candida glabrata and Saccharomyces cerevisiae. *J Antimicrob Chemother* 2004; **53:** 1081–5.
10. Hammer KA, *et al.* A review of the toxicity of Melaleuca alternifolia (tea tree) oil. *Food Chem Toxicol* 2006; **44:** 616–25.
11. Carson CF, *et al.* Melaleuca alternifolia (Tea Tree) oil: a review of antimicrobial and other medicinal properties. *Clin Microbiol Rev* 2006; **19:** 50–62.

Preparations

Proprietary Preparations (details are given in Part 3)
Austral.: Clean Skin Anti Acne; Rapaid Antiseptic†; Rapaid Itch Relief; ***Chile:*** Acnoxyl Gel Cuidado Intensivo†; Acnoxyl Gel De Limpieza†; Acnoxyl Stick Corrector†; Sebolic; ***Fr.:*** Myleuca; ***Israel:*** Burnshield; ***Malaysia:*** MOOV; ***Singapore:*** Rapaid†; ***UK:*** Burnshield Gel; Melavir.

Multi-ingredient: ***Arg.:*** Aveno; ***Austral.:*** Apex Repel Natural; APR Cream†; Clean Skin Face Wash; Curaderm†; Neutralice; Rapaid Rash-Relief; SP Cream†; VR†; ***Chile:*** Acnoxyl Abrasivo; Acnoxyl Gel Humectante; Acnoxyl Jabon Liquido; Acnoxyl Jabon†; Acnoxyl Locion Tonica; Acnoxyl Shampoo Cabello Graso†; ***Fr.:*** Cicatridine; Dermocica; Mycogel; Phytosquame; Squaphane P; ***Hong Kong:*** Mycogel; ***Ital.:*** Proctopure; ***Malaysia:*** T3 Acne; ***NZ:*** Apex Repel Natural; Electric Blue Headlice; Lice Blaster; ***Singapore:*** Burnaid; Rapaid†; T3; Tinasolve†; ***Thai.:*** Fungicon; Gynecon-T; ***UK:*** Dr Johnsons Nit & Lice; Sinose; Skin Clear; Tea Tree & Witch Hazel Cream; Teenstick.

Melanocyte-stimulating Hormone

B Hormone; Chromatophore Hormone; Intermedin; Intermedina; Melanotropin; MSH; Pigment Hormone.
CAS — 9002-79-3.

Profile

Melanocyte-stimulating hormone is a polypeptide isolated from the pars intermedia of the pituitary of fish and amphibia which causes dispersal of melanin granules in the skin of fish and amphibia and allows adaptation to the environment.
In adult humans, the pituitary gland lacks a distinct intermediate lobe, and the pituitary is not thought to secrete melanocyte-stimulating hormone (MSH) directly. However, the precursor molecule, pro-opiomelanocortin, is cleaved in the pituitary into corticotropin (p.1523), the glycoprotein β-lipotrophin (β-LPH), and an amino-terminal peptide. Subsequent processing in other tissues, such as the brain and gastrointestinal tract, may yield three forms of MSH, α-MSH (via corticotropin cleavage), β-MSH, and γ-MSH. The presence and function of these melanocyte-stimulating hormones in man are uncertain. A receptor analogous to that in amphibians is apparently lacking in humans; effects on skin pigmentation emanating from the pituitary are primarily mediated by corticotropin.
Release of melanocyte-stimulating hormone is inhibited in *animals* by melanostatin; there is also evidence for a hypothalamic releasing factor (MRF).
Melanocyte-stimulating hormone is under investigation, as α-MSH, in the prevention and treatment of ischaemic intrinsic acute renal failure. A synthetic analogue of α-MSH (4-L-norleucine-7-D-phenylalanine-α-MSH; melanotan-I) is under investigation as a stimulant of melatonin production for the prevention of sunburn.

Melanostatin

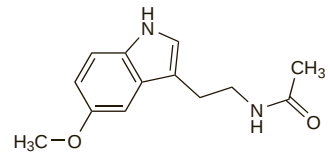
Intermedin-inhibiting Factor; Melanocyte-stimulating-hormone-release-inhibiting Factor; Melanostatina; Melanotropin Release-inhibiting Factor; MIF. Pro-Leu-Gly-NH_2.
CAS — 9083-38-9.

Profile

Melanostatin is a tripeptide, obtained from the hypothalamus, that inhibits the release of melanocyte-stimulating hormone (see above) in *animals*. However, there is little evidence of its activity in man. It has been tried in the treatment of depression and parkinsonism but with little benefit.

Melatonin

N-Acetyl-5-methoxytryptamine; Melatoniini; Melatonina; Melatoninum. *N*-[2-(5-Methoxyindol-3-yl)ethyl]acetamide.
$C_{13}H_{16}N_2O_2$ = 232.3.
CAS — 73-31-4.
ATC — N05CH01.
ATC Vet — QN05CH01.



Profile

Melatonin is a hormone produced in the pineal gland from the amino acid tryptophan. Results mainly from *animal* studies indicate that melatonin increases the concentration of aminobutyric acid and serotonin in the midbrain and hypothalamus and enhances the activity of pyridoxal-kinase, an enzyme involved in the synthesis of aminobutyric acid, dopamine, and serotonin. Melatonin is involved in the inhibition of gonadal development and in the control of oestrus. It is also involved in protective changes in skin coloration. There appears to be a diurnal rhythm of melatonin secretion; it is secreted during hours of darkness and may affect sleep pattern. Because of its possible role in influencing circadian rhythm, melatonin has been tried in the alleviation of jet lag and other disorders resulting from delay of sleep. Doses of 2 mg given orally before bedtime are used in the short-term management of insomnia in patients aged 55 or over. Melatonin has also been studied in various depressive disorders including seasonal affective disorder, and in large doses for its contraceptive activity.
A number of melatonin analogues are being developed.