

than the natural oil and is used in the preparation of lemon spirit and lemon syrup.

Photosensitivity is associated with citrus oils.

### Preparations

**BP 2008:** Compound Orange Spirit; Lemon Spirit; Lemon Syrup.

**Proprietary Preparations** (details are given in Part 3)

**Multi-ingredient:** **UK:** Lemsip Cough & Cold Dry Cough; Meltus Honey & Lemon.

### Lemon Grass Oil

Essência de Capim-Limão; Indian Melissa Oil; Indian Verbena Oil; Lemongrass, aceite de; Lemongrass Oil; Oleum Graminis Citrati.

### Profile

Lemon grass oil is the volatile oil obtained by distillation from *Cymbopogon flexuosus* or *C. citratus* (Gramineae). It contains citral (p.2284) and citronellal.

Lemon grass oil was formerly given as a carminative. It has been used in perfumery and as a flavour. It is also used in aromatherapy.

### Preparations

**Proprietary Preparations** (details are given in Part 3)

**Multi-ingredient:** **Austral.:** Apex Repel Natural; **NZ:** Apex Repel Natural; **Switz.:** Carmol; Carmol Plus†.

### Lemon Verbena

Herba Lippiae Citriodora; Herba Verbenae Odoratae; Hierba Luisa; Verbenae citriodoraefolium (lemon verbena leaf); Verveine Odorante; Verveine odorante, feuille de (lemon verbena leaf).

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

**Ph. Eur. 6.2** (Lemon Verdana Leaf). The whole or fragmented, dried leaves of *Aloysia citriodora* (*A. triphylla*, *Verbena triphylla*, *Lippia citriodora*). It contains a minimum of 2.5% acteoside ( $C_{29}H_{36}O_{15}$  = 624.6) expressed as ferulic acid and not less than 0.3% v/w essential oil for the whole drug and 0.2% v/w essential oil for the fragmented drug, all calculated with reference to the dried drug. After grinding it has a characteristic odour reminiscent of lemon.

### Profile

Lemon verbena, the flowering tops or leaves of *Lippia citriodora* (*Aloysia triphylla*; *Verbena triphylla*) (Verbenaceae), has antispasmodic and sedative actions and has been used for gastrointestinal disorders and as a tonic. It is most commonly used as an ingredient of herbal teas.

### Preparations

**Proprietary Preparations** (details are given in Part 3)

**Multi-ingredient:** **Spain:** Agua del Carmen.

### Lentinan

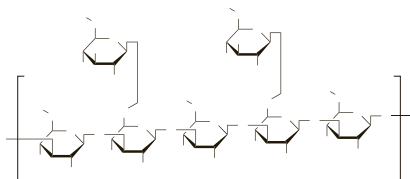
LC-33; Lentinano.

ЛЕНТИНАН

CAS — 37339-90-5.

ATC — L03AX01.

ATC Vet — QL03AX01.



### Profile

Lentinan is a  $\beta$ -1,3-D-glucan extracted from the shiitake mushroom *Lentinus edodes* (*Lentinula edodes*). It appears to act as an immunostimulant and has been tried in the treatment of malignant neoplasms and in HIV infection.

### Preparations

**Proprietary Preparations** (details are given in Part 3)

**Multi-ingredient:** **USA:** Better Cholesterol.

### Lepromin

Lepromina.

### Profile

Lepromin is a suspension of killed *Mycobacterium leprae* prepared from the skin of heavily infected patients suffering from lepromatous leprosy (lepromin H) or from armadillo tissue infected with *M. leprae* (lepromin A). It is used in an intradermal

skin test for the classification of leprosy (p.176) and the assessment of immune responsiveness to *M. leprae*. The test is not diagnostic for leprosy.

◇ The original lepromin (of Mitsuda and Hayashi), a suspension of the whole autoclaved homogenised leproma including some tissue elements, is sometimes called integral lepromin, whereas purified bacillary suspensions are sometimes called bacillary lepromins.<sup>1</sup> Leprolins are the soluble proteins of the bacilli with or without proteins of the lepra, not coagulated by heating, and do not elicit the early reaction. The Dharmendra antigen is neither a lepromin nor a leprolin and is used especially for testing the early reactions; it gives only a weak late reaction. Purified protein derivatives of *Mycobacterium leprae*, such as leprosin A,<sup>2</sup> have also been developed.

1. Abe M, *et al.* Immunological problems in leprosy research. *Lepr Rev* 1974; **45**: 244–72.

2. Stanford JL. Skin testing with mycobacterial reagents in leprosy. *Tubercle* 1984; **65**: 63–74.

### Leptin

Leptina; OB protein.

Лептин

### Profile

Leptin, an endogenous peptide hormone produced mainly by white adipocytes in adipose tissue, is involved in the long-term maintenance of body-weight through regulation of food intake and energy expenditure. Leptin has a negative feedback effect on hypothalamic control of neurotransmitters involved in the control of appetite; thus, an increase in adipose tissue mass results in an increase in leptin concentrations that in turn suppresses expression of appetite stimulatory peptides and *vice versa*. Mutations of either the leptin receptor or the *ob* gene that encodes the leptin protein result in failure of leptin's control over appetite producing forms of morbid early-onset obesity. However, it is not clear that common obesity (p.2149) is associated with similar genetic mutations or, as also postulated, is associated with functional leptin resistance caused by sustained high leptin concentrations.

Leptin is produced in other tissues, and studies have suggested additional functions and properties including modulation of neuroendocrine, immune, and reproductive processes. The potential role of leptin in a variety of disease states including syndromes of insulin resistance, auto-immune diseases, and cardiovascular disorders is also being studied.

Replacement therapy with recombinant leptin is under investigation in the management of obesity as well as some other disorders including generalised lipodystrophy and hypothalamic amenorrhoea secondary to energy deficits or low body-weight.

### ◇ References.

- Hukshorn CJ, *et al.* Weekly subcutaneous pegylated recombinant native human leptin (PEG-OB) administration in obese men. *J Clin Endocrinol Metab* 2000; **85**: 4003–4009.
- Oral EA, *et al.* Leptin-replacement therapy for lipodystrophy. *N Engl J Med* 2002; **346**: 570–8.
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- Javor ED, *et al.* Proteinuric nephropathy in acquired and congenital generalized lipodystrophy: baseline characteristics and course during recombinant leptin therapy. *J Clin Endocrinol Metab* 2004; **89**: 3199–3207.
- Ebihara K, *et al.* Long-term leptin-replacement therapy for lipotrophic diabetes. *N Engl J Med* 2004; **351**: 615–6.
- Welt CK, *et al.* Recombinant human leptin in women with hypothalamic amenorrhoea. *N Engl J Med* 2004; **351**: 987–97.
- Bell-Anderson KS, Bryson JM. Leptin as a potential treatment for obesity: progress to date. *Treat Endocrinol* 2004; **3**: 11–18.
- Chan JL, Mantzoros CS. Role of leptin in energy-deprivation states: normal human physiology and clinical implications for hypothalamic amenorrhoea and anorexia nervosa. *Lancet* 2005; **366**: 74–85.
- Zelissen PM, *et al.* Effect of three treatment schedules of recombinant methionyl human leptin on body weight in obese adults: a randomized, placebo-controlled trial. *Diabetes Obes Metab* 2005; **7**: 755–61.
- Brennan AM, Mantzoros CS. Drug insight: the role of leptin in human physiology and pathophysiology — emerging clinical applications. *Nat Clin Pract Endocrinol Metab* 2006; **2**: 318–27.
- Ebihara K, *et al.* Efficacy and safety of leptin-replacement therapy and possible mechanisms of leptin actions in patients with generalized lipodystrophy. *J Clin Endocrinol Metab* 2007; **92**: 532–41.
- Chan JL, *et al.* Pharmacokinetics of recombinant methionyl human leptin after subcutaneous administration: variation of concentration-dependent parameters according to assay. *J Clin Endocrinol Metab* 2007; **92**: 2307–11.

### Lerdelimumab (rINN)

Lérdelimumab; Lerdelimumabum. Immunoglobulin G4, anti-(human transforming growth factor  $\beta$ 2) (human monoclonal CAT-152  $\gamma$ 4-chain), disulfide with human monoclonal CAT-152  $\lambda$ -chain, dimer.

Лерделимумаб

CAS — 285985-06-0.

### Profile

Lerdelimumab is a human monoclonal antibody specific for transforming growth factor  $\beta$ 2 that has been investigated for the prevention of excessive postoperative scarring after glaucoma surgery.

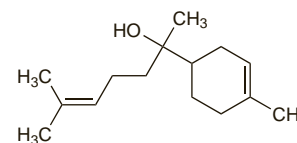
### Levomenol (rINN)

(–)- $\alpha$ -Bisabolol; Lévoménol; Levomenolum; Lewomenol. (–)-6-Methyl-2-(4-methyl-3-cyclohexen-1-yl)-5-hepten-2-ol.

ЛЕВОМЕНОЛ

$C_{15}H_{26}O$  = 222.4.

CAS — 23089-26-1.



### Profile

Levomenol is a sesquiterpene isolated from the volatile oil of chamomile (p.2279). It has been tried as a transepidermal penetration enhancer and is present in many emollient preparations.

### ◇ References.

- Kadir R, Barry BW.  $\alpha$ -Bisabolol, a possible safe penetration enhancer for dermal and transdermal therapeutics. *Int J Pharmaceutics* 1991; **70**: 87–94.

### Preparations

**Proprietary Preparations** (details are given in Part 3)

**Multi-ingredient:** **Arg.:** Confortel†; **Keracnyl:** **Austria:** Senciscutan; **Belg.:** Purigel Cnsp; **Chile:** Cuidado Intimo; Eucerin Piel Grasa; Queratopil; Ruboril; Suavigel; **Cz.:** Fyterol†; **Senciscutan;** **Fr.:** Alpha 5 DS†; Apaisance†; Clean-AC; Dermophil Indien†; Epiphane†; Keracnyl; Keracnyl eau nettoyante; Seborheane; Squaphane E; Telfrax; **Ger.:** Mirfulan Spray N; Senciscutan; **Hong Kong:** Kamillosan†; **Ital.:** Biothymus DS; Broxo al Fluoro; Decon Lavanda; Intim; Pitiren; Saugella Poligin 7; Tial-Z; **Mex.:** Aveendx; **Port.:** Hidratante VV; Lactonico†; **Switz.:** Antidry; Dermophil Indien; Tenderdol; **Thai.:** Kamillosan†; **UK:** Xclair; **Venez.:** Kamillosan.

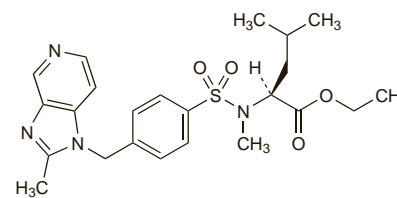
### Lexipafant (BAN, USAN, rINN)

BB-882; DO-6; Lexipafantum. Ethyl N-methyl-N-[ $\alpha$ -(2-methylimidazo[4,5-c]pyridin-1-yl)tosyl]-L-leucinate.

Лексипафант

$C_{23}H_{30}N_4O_4S$  = 458.6.

CAS — 139133-26-9.



### Profile

Lexipafant is a platelet-activating factor antagonist that is being investigated in the prevention of neurological and renal complications after cardiac surgery. It has also been studied for possible applications in asthma, sepsis, and pancreatitis.

### Linseed

Flaxseed; Linsamen; Lenmag; Lin; Lin, graine de; Linaza; Linfrö; Linho; Lini semen; Lini Semina; Linum; Lnéné semeno; Nasienie Inu; Pellavansiemen; Sémeyns; Semilla de Lino.

ATC — A06AC05.

ATC Vet — QA06AC05.

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

**Ph. Eur. 6.2** (Linseed). The dried ripe seeds of *Linum usitatissimum*. Protect from light.

### Profile

Preparations of linseed have been administered for their demulcent and laxative actions. Crushed linseed has been used as a