Food allergy. Oral sodium cromoglicate has been used in the prophylaxis of food allergy reactions (p.564). However, efficacy has not been unequivocally established.

Mastocytosis. Mastocytosis is a rare condition characterised by abnormal proliferation of mast cells and their accumulation in body tissues.[1-3] Signs and symptoms of the disease result from the spontaneous or induced release of mast cell mediators. Mastocytosis occurs in cutaneous or systemic forms, which are further subdivided based on clinical presentation and prognosis. Clinical algorithms and recommendations for diagnosis, treatment, and response criteria have been developed.[4]

- *Cutaneous mastocytosis* most often manifests as urticaria pigmentosa (disseminated red-brown macules, papules, or plaques); other symptoms include flushing, pruritus, urticaria, blistering, and dermatographism. Mastocytomas may occur as brownish solitary or multiple nodular accumulations of mast cells. In children with cutaneous mastocytosis, symptoms will resolve in about half by adolescence.
- *Systemic mastocytosis* can involve diverse organs and tissues including the bones, liver, spleen, lymph nodes, haematopoietic system, gastrointestinal tract, and also the skin. General symptoms include fatigue, weight loss, fever, and sweats. Gastrointestinal complaints such as abdominal pain and diarrhoea are common, and some patients may experience malabsorption, steatorrhoea, or peptic ulcer disease. Bone marrow involvement may result in bone pain, osteoporosis, fractures, bone marrow fibrosis, and myeloproliferative and myelodysplastic diseases. Other systemic effects include lymphadenopathy, hepatosplenomegaly, headache and other neuropsychiatric symptoms, syncope, and anaphylactoid reactions.

Avoidance of trigger factors is an important measure in the management of mastocytosis. Such factors include exposure to extremes of cold or heat (hot bath or sunbathing), emotional stress, mechanical irritation (vigorous towel rubbing, massage), infections, alcohol, some drugs (e.g. aspirin, NSAIDs, opioid analgesics, sympathomimetics, polymyxin B, dextran, radiographic dyes), and animal venoms.[1,2,5]

Treatment is aimed at relieving symptoms and does not alter the course of the disease.[1,2,4-6] H_1-antagonist antihistamines such as hydroxyzine and cyproheptadine are used to provide relief of flushing, pruritus, urticaria, blistering, and abdominal pain. Patients at risk of anaphylactoid reactions should carry adrenaline for self-injection, and those who have repeated reactions should be given prophylactic antihistamines. H_2-antagonist antihistamines such as cimetidine, and proton pump inhibitors such as omeprazole, are used to manage gastrointestinal symptoms, particularly gastritis and peptic ulcer disease. Bisphosphonates may be helpful for osteopenia and bone pain. Sodium cromoglicate is given to manage abdominal pain, nausea, and diarrhoea. It may also provide some relief of headache, neuropsychiatric symptoms, and skin symptoms in some patients. Photochemotherapy using an oral psoralen with ultraviolet A irradiation (PUVA—see p.1606) has been used to reduce cutaneous manifestations of mastocytosis, but urticaria pigmentosa usually recurs within several weeks. Topical PUVA appears to be ineffective. Mastocytomas that cause symptoms may be treated with local PUVA or potent topical corticosteroids. Although surgical removal may be considered, the majority of mastocytomas will involute spontaneously.

Other treatments have also been tried in the treatment of small numbers of patients with aggressive systemic mastocytosis. Mixed results have been reported with the use of interferon alfa.[1] There is a report of ciclosporin with methylprednisolone being used successfully.[4] Imatinib has been used successfully in systemic mastocytosis with associated eosinophilia and with a mutation of the platelet-derived growth factor receptor-α gene on chromosome 4q12.[6] Beneficial responses to cladribine have also occurred in a small number of patients with systemic disease.[6,7]

1. Hartmann K, Henz BM. Mastocytosis: recent advances in defining the disease. *Br J Dermatol* 2001; **144:** 682–95.
2. Carter MC, Metcalfe DD. Paediatric mastocytosis. *Arch Dis Child* 2002; **86:** 315–19.
3. Castells MC. Mastocytosis: classification, diagnosis, and clinical presentation. *Allergy Asthma Proc* 2004; **25:** 33–6.
4. Valent P, *et al.* Standards and standardization in mastocytosis: consensus statements on diagnostics, treatment recommendations and response criteria. *Eur J Clin Invest* 2007; **37:** 435–53.
5. Almahroos M, Kurban AK. Management of mastocytosis. *Clin Dermatol* 2003; **21:** 274–7.
6. Tefferi A, Pardanani A. Systemic mastocytosis: current concepts and treatment advances. *Curr Hematol Rep* 2004; **3:** 197–202.
7. Kluin-Nelemans HC, *et al.* Cladribine therapy for systemic mastocytosis. *Blood* 2003; **102:** 4270–6.

Rhinitis and conjunctivitis. Many drugs, including sodium cromoglicate, are used in the management of allergic rhinitis (p.565) and conjunctivitis (p.564). There is some evidence that nedocromil[1] or lodoxamide[2] may be more effective than cromoglicate in the management of vernal keratoconjunctivitis.

1. El Hennawi M. A double-blind placebo controlled group comparative study of ophthalmic sodium cromoglycate and nedocromil sodium in the treatment of vernal keratoconjunctivitis. *Br J Ophthalmol* 1994; **78:** 365–9.
2. Leonardi A, *et al.* Effect of lodoxamide and disodium cromoglycate on tear eosinophil cationic protein in vernal keratoconjunctivitis. *Br J Ophthalmol* 1997; **81:** 23–6.

Preparations

BP 2008: Sodium Cromoglicate Eye Drops; Sodium Cromoglicate Powder for Inhalation;
USP 31: Cromolyn Sodium Inhalation Powder; Cromolyn Sodium Inhalation Solution; Cromolyn Sodium Nasal Solution; Cromolyn Sodium Ophthalmic Solution.

Proprietary Preparations (details are given in Part 3)
Arg.: Claroftal; Clo-5†; Intal; Klonalcrom; Sificrom†; ***Austral.:*** Cromese; Intal; Opticrom; Rynacrom; ***Austria:*** Acromax; Aeropaxyn†; Allergo-COMOD; Coldacrom; Cromal†; Cromoglin; Cromophtal; Intal; Lomusol; Vividrin; ***Belg.:*** Cromabak; Cromonez-Pos; Cromophta-Pos; Lomudal; Lomusol; Opticrom; ***Braz.:*** Cromabak; Cromocato; Cromolerg; Intal; Maxicrom; Rilan†; ***Canad.:*** Apo-Cromolyn; Cromolyn; Gen-Cromolyn†; Intal; Nalcrom; Opticrom; Solu-Crom; ***Chile:*** Oftacon; ***Cz.:*** Allergo-COMOD; Allergocrom; Cromobene; Cromogen†; Cromohexal; Cromolyn†; Cusicrom; DNCG†; Hay-Crom†; Intal†; Lecrolyn; Nalcrom; Stadaglicin†; Steri-Neb Cromogen†; Vividrin†; ***Denm.:*** Hexacromant†; Lecrolyn; Lomudal; ***Fin.:*** Glinor; Lecrolyn; Lomudal; ***Fr.:*** Allergo-COMOD†; Alloptrex; Cromabak; Cromadoses; Cromoptic; Cromosoft†; Intercron; Lomudal; Lomusol; Multicrom; Nalcron†; Ophtacalm; Opticron; ***Ger.:*** Acecromol†; Alerg†; Allergo-COMOD; Allergocrom; Allergoval; Colimune; Crom-Ophtal; Cromo; Cromoglicin†; Cromohexal; Cromolind; Cromopp; Diffusyl; Dispacromil; DNCG; duracromant†; Fenistil†; Flenid†; Flui-DNCG; Intal; IsoCrom; Lomupren; Opticrom; Otriven H†; Padiacrom; Pentacrom†; Pentatop; Pulbil†; Siozwo Allerg†; Vividrin; ***Gr.:*** Allergojovis; Allergostop; Allergotin; Botastin; Crolidin†; Cromabak; Cromo-POS; Cromodal; Cromolergin UD; Duobetic†; Erystamine-K; Fluvet†; Indoprex†; Iopanchol; Kaosyl; Lomudal; Nalcrom; Spaziron; Ufocollyre; Vekfanol; Vividrin; Zineli; Zulboral; ***Hong Kong:*** Cromabak; Cromal; Intal†; Mitayaku; Opticrom†; Stadaglicin; ***Hung.:*** Cromohexal; Cromolyn†; Cusicrom†; Intal; Lecrolyn; Opticrom; Stadaglicin†; Taleum; ***India:*** Cromal; Fintal†; ***Indon.:*** Crom-Ophtal; ***Irl.:*** Cromogen; Hay-Crom; Intal; Nalcrom; Opticrom; Rynacrom; Vividrin; ***Israel:*** Cromogen†; Cromolyn; Cromoptic; Cronase; Lomudal; Opticrom; Vicrom; ***Ital.:*** Acticrom†; Brunicrom; Cromabak; Cromantal; Cromosan†; Frenal†; Gastrofrenal; Lomudal; Lomuspray†; Nalcrom; Sificrom; ***Jpn:*** Intal; ***Malaysia:*** Allergocrom†; Cusicrom; Intal†; Opticrom; Stadaglicin; Vividrin†; ***Mex.:*** Alercrom; Exaler†; Intal; Livari; Maxicrom; Oftacon†; Opticrom; Rynacrom; Spralyn; ***Mon.:*** Zallyre; ***Neth.:*** Allerg-Abak; Allergo-COMOD; Allergocrom†; Lomudal; Lomusol; Nalcrom; Opticrom; Otrivin hooikoorts†; Prevalin; Vividrin; ***Norw.:*** Lecrolyn; Lomudal; ***NZ:*** Cromolux; Intal; Nalcrom; Opticrom; Optrex Hayfever Allergy; Rynacrom; Vicrom; ***Philipp.:*** Cromabak; Lecrolyn; Vividrin; ***Pol.:*** Allergo-COMOD; Allergocrom; Cromogen; Cromohexal; Cromosol; Cromoxal; Cropoz G; Cusicrom; Lecrolyn; Nalcrom; Polcrom; Vividrin; ***Port.:*** Croglina; Cromabak; Cromex†; Cusicrom†; Davicrome; Fenolip; Intal; Opticrom; Rynacrom†; ***Rus.:*** Cromoglin (Кромоглин); Cromohexal (Кромогексал); Cropoz (Кропоз); Hay-Crom (Хай-кром); Ifiral (Ифирал); Intal (Интал); Lecrolyn (Лекролин); ***S.Afr.:*** Cromabak†; Cromohexal; Stop-Allerg; Vividrin†; ***Singapore:*** Cromabak; Intal; Opticrom; Rynacrom†; Sificrom†; Vividrin; ***Spain:*** Alergocrom; Cromo Asma†; Cusicrom; Farmacrom; Frenal; Gastrofrenal; Intal†; Nebulasma; Nebulcrom; Poledin†; Primover; Renocil; Rinilyn†; Rinofrenal; ***Swed.:*** Lecrolyn; Lomudal; Pollyferm; Rinil†; ***Switz.:*** Allergo-COMOD; Cromabak; Cromodyn; Cromosol ophta; Cromosol UD; Glicinal†; Lomudal; Lomusol; Nalcrom; Opticrom; Vividrin; ***Thai.:*** Intal; Lecrolyn†; Opticrom†; Rynacrom; Vividrin; ***Turk.:*** Allergo-COMOD; Allergocrom; Allersol; Intal; Opticrom; Rynacrom; ***UK:*** Clariteyes; Clarityn; Cromogen†; Hay-Crom; Hayfever Eye Drops; Intal; Nalcrom; Opticrom; Optrex Allergy; Pollenase Allergy; Rynacrom; Vivicrom; Vividrin; ***USA:*** Crolom; Gastrocrom; Intal; Nasalcrom; Opticrom; ***Venez.:*** Alergocrom†; Cromisol; Cromo-Spray†; Cromoftal; Maxicrom†.

Multi-ingredient: ***Arg.:*** Duotec†; Hyalcrom; Rinogel; ***Austria:*** Ditec; ***Cz.:*** Allergocrom Kombi; Ditec†; Intal Plus†; ***Ger.:*** Aarane N; Allergospasmin; Ditec†; Lomupren compositum†; ***Hung.:*** Duotec†; ***India:*** Asthacrom; ***Ital.:*** Cromozil; Rinofrenal; Visuglican; ***Malaysia:*** Rynacrom Compound†; ***Port.:*** Rinoglin†; ***Rus.:*** Ditec (Дитек); ***Spain:*** Frenal Compositum; Rinofrenal Plus; ***Switz.:*** Aarane†; Allergospasmine†; Lomusol-X†; ***Thai.:*** Rynacrom Compound†; ***Turk.:*** Rynacrom Compound; ***UK:*** Rynacrom Compound†.

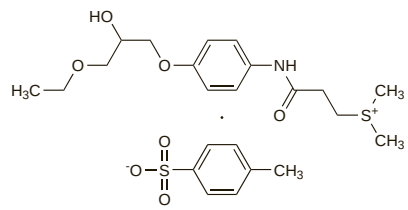
Suplatast Tosilate *(rINN)*

IPD-1151T; Suplatast, Tosilate de; Suplatast Tosylate; Suplatastum Tosilas; Tosilato de suplatast. (±)-(2-{[*p*-(3-Ethoxy-2-hydroxypropoxy)phenyl]carbamoyl}ethyl)dimethylsulphonium *p*-toluenesulphonate; (3-{[4-(3-Ethoxy-2-hydroxypropoxy)phenyl]amino}-3-oxopropyl)dimethylsulphonium *p*-toluenesulphonate.

Супластаст Тозилат

$C_{23}H_{33}NO_7S_2$ = 499.6.

CAS — 94055-76-2.



Profile

Suplatast tosilate is an anti-allergic given orally in the prophylactic management of asthma and other allergic conditions.

◊ References.

1. Sano Y, *et al.* Anti-inflammatory effect of suplatast tosilate on mild asthma. *Chest* 1997; **112:** 862–3.
2. Nihei Y, *et al.* Suplatast tosilate (IPD), a new immunoregulator, is effective in vitiligo treatment. *J Dermatol* 1998; **25:** 250–5.
3. Tamaoki J, *et al.* Effect of suplatast tosilate, a Th2 cytokine inhibitor, on steroid-dependent asthma: a double-blind randomised study. *Lancet* 2000; **356:** 273–8.
4. Shioya T, *et al.* Effect of suplatast tosilate, a Th2 cytokine inhibitor, on cough variant asthma. *Eur J Clin Pharmacol* 2002; **58:** 171–6.
5. Matsuda Y, *et al.* Improvement of alanine aminotransferase by administration of suplatast tosilate plus ursodeoxycholic acid in patients with resistance to ursodeoxycholic acid monotherapy on hepatitis C virus-related chronic liver disease. *Intern Med* 2002; **41:** 774–9.
6. Sakuma-Oyama Y, *et al.* A case of recurrent cutaneous eosinophilic vasculitis: successful adjuvant therapy with suplatast tosilate. *Br J Dermatol* 2003; **149:** 901–3.
7. Sano T, *et al.* Higashishikoku Asthma Research Group. Add-on effects of suplatast tosilate in bronchial asthma patients treated with inhaled corticosteroids. *Lung* 2003; **181:** 227–35.
8. Teraki Y, Fukuda T. Pemphigoid nodularis associated with psoriatic erythroderma: successful treatment with suplatast tosilate. *Br J Dermatol* 2008; **158:** 424–6.

Preparations

Proprietary Preparations (details are given in Part 3)
Jpn: IPD.

Terbutaline Sulfate *(USAN, rINNM)* ⊗

KWD-2019; Sulfato de terbutalina; Terbutaliinisulfaatti; Terbutalin Sülfat; Terbutaline, sulfate de; Terbutaline Sulphate *(BANM)*; Terbutalini sulfas; Terbutalino sulfatas; Terbutalinsulfat; Terbutalinsulfát; Terbutalin-szulfát. 2-*tert*-Butylamino-1-(3,5-dihydroxyphenyl)ethanol sulphate.

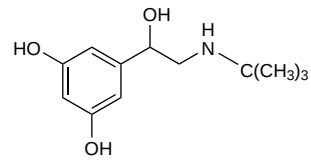
Тербуталина Сульфат

$(C_{12}H_{19}NO_3)_2,H_2SO_4$ = 548.6.

CAS — 23031-25-6 (terbutaline); 23031-32-5 (terbutaline sulfate).

ATC — R03AC03; R03CC03.

ATC Vet — QR03AC03; QR03CC03.



(terbutaline)

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

Ph. Eur. 6.2 (Terbutaline Sulphate). A white or almost white crystalline powder. It exhibits polymorphism. Freely soluble in water; slightly soluble in alcohol.

USP 31 (Terbutaline Sulfate). A white to grey-white crystalline powder; odourless or has a faint odour of acetic acid. Soluble in water and in 0.1N hydrochloric acid; insoluble in chloroform; slightly soluble in methyl alcohol. Store at 15° to 30°. Protect from light.

Adverse Effects and Precautions

As for Salbutamol, p.1131.

Overdosage. An overdose of terbutaline due to transcutaneous absorption has been reported after inappropriate topical application to skin infected with tinea.[1] Transcutaneous absorption should be considered especially when children with facial eczema or dermatitis are given terbutaline via a nebuliser and mask.

For general effects of $beta_2$ agonists after overdose, see Salbutamol p.1132.

1. Ingrams GJ, Morgan FB. Transcutaneous overdose of terbutaline. *BMJ* 1993; **307:** 484.

Pulmonary oedema. Pulmonary oedema has occurred in women given $beta_2$ agonists, including terbutaline, for premature labour.[1] The risk factors, the most important of which is fluid overload, are discussed under Precautions for Salbutamol, p.1132.

1. Perry KG, *et al.* Incidence of adverse cardiopulmonary effects with low-dose continuous terbutaline infusion. *Am J Obstet Gynecol* 1995; **173:** 1273–7.

Tolerance. As with other $beta_2$ agonists (see p.1132) there is some evidence[1] that tolerance may develop to terbutaline when it is used regularly.

1. Hancox RJ, *et al.* Tolerance to beta-agonists during acute bronchoconstriction. *Eur Respir J* 1999; **14:** 283–7.

Tooth erosion. The pH of some inhaled powder formulations of terbutaline, as well as of some corticosteroids, was found to be below 5.5, and it was suggested that this might contribute to the dissolution of enamel surfaces of teeth.[1] A later cohort study found no association between asthma and tooth erosion; however only about 10% of the medication prescribed for asthma in the cohort had a pH lower than 5.5.[2]

1. O'Sullivan EA, Curzon MEJ. Drug treatments for asthma may cause erosive tooth damage. *BMJ* 1998; **317:** 820.
2. Dugmore CR, Rock WP. Asthma and tooth erosion: is there an association? *Int J Paediatr Dent* 2003; **13:** 417–24.

Interactions

As for Salbutamol, p.1132.