treatment of hyperlipidaemias (p.1169). The usual oral dose is 600 to 1200 mg daily in divided doses.

Pantethine is also used as a nutritional supplement.

Preparations

Proprietary Preparations (details are given in Part 3)
Hong Kong: Pantomin†; ***Ital.:*** Pantetina; ***Jpn:*** Pantosin; ***Spain:*** Liponet†; Obliterol†.

Multi-ingredient: ***Ital.:*** Carpantin†.

Pargyline Hydrochloride *(BANM, USAN, rINNM)*

A-19120; Hidrocloruro de pargilina; MO-911; NSC-43798; Pargyline, Chlorhydrate de; Pargylini Hydrochloridum. *N*-Methyl-*N*-2-propynylbenzylamine hydrochloride; Benzylmethylprop-2-ynylamine hydrochloride.

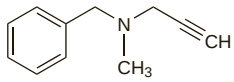
Паргилина Гидрохлорид

$C_{11}H_{13}N,HCl$ = 195.7.

CAS — 555-57-7 (pargyline); 306-07-0 (pargyline hydrochloride).

ATC — C02KC01.

ATC Vet — QC02KC01.



(pargyline)

Profile

Pargyline hydrochloride is an MAOI (see Phenelzine Sulfate, p.415) that was formerly used in the treatment of moderate to severe hypertension.

Parnaparin Sodium *(BAN, rINN)*

OP-21-23; Parnapariininatrium; Parnaparin sodná sůl; Parnaparin Sodyum; Parnaparina sódica; Parnaparine sodique; Parnaparin-natrium; Parnaparin-nátrium; Parnaparino natrio druska; Parnaparinum natricum.

Парнапарин Натрий

CAS — 9041-08-1.

ATC — B01AB07.

ATC Vet — QB01AB07.

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

Ph. Eur. 6.2 (Parnaparin Sodium). It is prepared by hydrogen peroxide and cupric salt depolymerisation of heparin obtained from the intestinal mucosa of pigs and cattle. The majority of the components have a 2-*O*-sulfo-α-L-idopyranosuronic acid structure at the non-reducing end and a 2-*N*,6-*O*-disulfo-D-glucosamine structure at the reducing end of their chain. The mass-average molecular mass ranges between 4000 and 6000, with a characteristic value of about 5000. The mass percentage of chains lower than 3000 is not more than 30%. The degree of sulfation is 2.0 to 2.6 per disaccharide unit. Potency is not less than 75 units and not more than 110 units of anti-factor Xa activity per mg with reference to the dried substance, and the ratio of anti-factor Xa activity to anti-factor IIa (antithrombin) activity is between 1.5 and 3.0.

Profile

Parnaparin sodium is a low-molecular-weight heparin (p.1329) with anticoagulant activity used in the prevention of postoperative venous thromboembolism (p.1189); it has also been used in other thromboembolic disorders. For general surgical procedures it is given by subcutaneous injection in a dose of 3200 units 2 hours before the procedure, followed by 3200 units once daily for 7 days or until the patient is fully ambulant. For higher risk or orthopaedic patients a dose of 4250 units is given 12 hours before the procedure, followed by 4250 units 12 hours postoperatively and then once daily for 10 days.

For treatment of thromboembolism a dose of 6400 units may be given by subcutaneous injection for 7 to 10 days.

◊ References.

1. Frampton JE, Faulds D. Parnaparin: a review of its pharmacology, and clinical application in the prevention and treatment of thromboembolic and other vascular disorders. *Drugs* 1994; **47:** 652–76.
2. McKeage K, Keating GM. Parnaparin: a review of its use in the management of venous thromboembolism, chronic venous disease and other vascular disorders. *Drugs* 2008; **68:** 105–22.

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Tromboparin†; ***Cz.:*** Fluxum; ***Gr.:*** Thromboparin; Tromboparin†; ***Hung.:*** Fluxum; ***Ital.:*** Fluxum; ***Mex.:*** Fluxum; ***Pol.:*** Fluxum; Tromboparin; ***Turk.:*** Fluxum; ***Venez.:*** Tromboparin.

Penbutolol Sulfate *(USAN, rINNM)* ⊗

Hoe-39-893d; Hoe-893d; Levopenbutolol Sulfate; Penbutolol Hemisulfate; Penbutolol sulfát; Penbutolol, sulfate de; Penbutolol Sulphate *(BANM)*; Penbutololi sulfas; Penbutololio sulfatas; Penbutololisulfaatti; Penbutololsulfat; Penbutolol-szulfát; Sulfato de penbutolol. (*S*)-1-*tert*-Butylamino-3-(2-cyclopentylphenoxy)propan-2-ol hemisulfate.

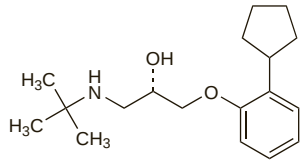
Пенбутолола Сульфат

$(C_{18}H_{29}NO_2)_2,H_2SO_4$ = 680.9.

CAS — 38363-40-5 (penbutolol); 38363-32-5 (penbutolol sulfate).

ATC — C07AA23.

ATC Vet — QC07AA23.



(penbutolol)

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

Ph. Eur. 6.2 (Penbutolol Sulphate). A white or almost white, crystalline powder. Slightly soluble in water; practically insoluble in cyclohexane; soluble in methyl alcohol. Protect from light.

USP 31 (Penbutolol Sulfate). A white to off-white, crystalline powder. Soluble in water and in methyl alcohol. Store in airtight containers. Protect from light.

Adverse Effects, Treatment, and Precautions

As for Beta Blockers, p.1226.

Interactions

The interactions associated with beta blockers are discussed on p.1228.

Pharmacokinetics

Penbutolol is readily absorbed from the gastrointestinal tract and peak plasma concentrations occur about 1 to 3 hours after a dose. Penbutolol is 80 to 98% bound to plasma proteins. It has a high lipid solubility. It is extensively metabolised in the liver by hydroxylation and glucuronidation, the metabolites being excreted in the urine with only small amounts of unchanged penbutolol. A plasma elimination half-life of about 20 hours has been reported.

Renal impairment. Glucuronidation was considered more prominent than hydroxylation in the metabolism of penbutolol and its activity was not altered in patients with renal impairment.[1]

1. Bernard N, *et al.* Pharmacokinetics of penbutolol and its metabolites in renal insufficiency. *Eur J Clin Pharmacol* 1985; **29:** 215–19.

Uses and Administration

Penbutolol is a non-cardioselective beta blocker (p.1225). It is reported to possess some intrinsic sympathomimetic activity but lacks membrane-stabilising properties.

Penbutolol is used as the sulfate in the management of hypertension (p.1171). It may also be used in cardiac disorders such as angina pectoris (p.1157).

In **hypertension** penbutolol sulfate is given in an initial oral dose of 20 mg daily; the dose may be increased if necessary to 40 to 80 mg daily. Maximum antihypertensive efficacy is reported to occur within 2 weeks in patients given a dose of 20 mg daily but about 4 weeks may be required for maximum effect in patients given 10 mg daily.

Penbutolol sulfate has also been used in similar doses in cardiac disorders such as **angina**.

Preparations

USP 31: Penbutolol Sulfate Tablets.

Proprietary Preparations (details are given in Part 3)
Ger.: Betapressin; ***USA:*** Levatol.

Multi-ingredient: ***Ger.:*** Betarelix; Betasemid.

Pentaerithrityl Tetranitrate *(BAN, rINN)*

Erynite; Nitropentaerythrol; Nitropenthrite; Pentaérithrityle, Tétranitrate de; Pentaerithrityli Tetranitras; Pentaeritritilio tetranitratas; Pentaeritritol Tetranitrat; Pentaeritrit-tetranitrát; Pentaerityltetranitrat; Pentaerityrityltetranitraatti; Pentaerythritol Tetranitrate; Pentaerythritolum Tetranitricum; Pentaerythrityl Tetranitrate; Pentaérythrityle, tétranitrate de; Pentaerythrityli tetranitras; Pentaerythrityl-tetranitrát; Pentaerytrityltetranitrat; Pentaerytrityylitetranitraatti; Pentaerytrytylu tetraazotan; Pentanitrol; PETN; Tetranitrato de pentaeritritilo. 2,2-Bis(hydroxymethyl)propane-1,3-diol tetranitrate.

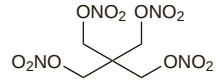
Пентаэритритила Тетранитрат

$C_5H_8N_4O_{12}$ = 316.1.

CAS — 78-11-5.

ATC — C01DA05.

ATC Vet — QC01DA05.



NOTE. The synonym PETN has been applied to both niceritrol and pentaerithrityl tetranitrate.

Pharmacopoeias. *Chin.* and *Eur.* (see p.vii) include as diluted pentaerithrityl tetranitrate.

Ph. Eur. 6.2 (Pentaerithrityl Tetranitrate, Diluted). A mixture of pentaerithrityl tetranitrate with lactose monohydrate or mannitol. Its solubility depends on the diluent and its concentration. Protect from light and heat.

Undiluted pentaerithrityl tetranitrate is a white or slightly yellowish powder. Practically insoluble in water; slightly soluble in alcohol; soluble in acetone.

Handling. Undiluted pentaerithrityl tetranitrate can be exploded by percussion or excessive heat.

Profile

Pentaerithrityl tetranitrate is a vasodilator with general properties similar to those of glyceryl trinitrate (p.1296) but its duration of action is more prolonged.

It is used in angina pectoris (p.1157) in usual oral doses of up to 240 mg daily, in divided doses, before a meal. It is also given as modified-release preparations.

Pentaerithrityl trinitrate, an active metabolite of pentaerithrityl tetranitrate, has also been used clinically under the name pentrinitrol.

Preparations

Proprietary Preparations (details are given in Part 3)
Chile: Cardiosedantol; ***Cz.:*** Pentalong; ***Fr.:*** Nitrodex†; ***Ger.:*** Dilcoran; Nirason N; Pentalong; ***Hung.:*** Nitropenton; ***India:*** Peritrate; ***Ital.:*** Peritrate; ***Switz.:*** Nitrodex†; ***Thai.:*** Peritrate; ***Turk.:*** Danitrin.

Multi-ingredient: ***Austria:*** Spasmocor; ***Ger.:*** Nitro-Crataegutt†; Nitro-Obsidan†; VisanoCor N†; ***Pol.:*** Pentaerythritol Compositum.

Pentifylline *(BAN, rINN)*

1-Hexyltheobromine; Pentifilina; Pentifylliini; Pentifyllin; Pentifyllinum; SK-7. 1-Hexyl-3,7-dimethylxanthine.

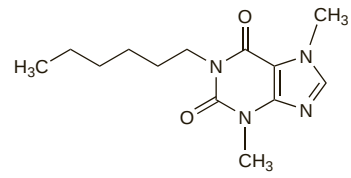
Пентифиллин

$C_{13}H_{20}N_4O_2$ = 264.3.

CAS — 1028-33-7.

ATC — C04AD01.

ATC Vet — QC04AD01.



Profile

Pentifylline is a xanthine derivative that has been used as a vasodilator in the management of peripheral or cerebral vascular disorders.

Preparations

Proprietary Preparations (details are given in Part 3)
Ger.: Cosaldon†.

Multi-ingredient: ***S.Afr.:*** Cosaldon†.

Pentosan Polysulfate Sodium *(BAN, USAN, rINN)*

Natrii pentosani polusulfas; Natrii Pentosani Polysulfas; Natriumpentosaanipolys Ulfaatti; Natriumpentosanpolysulfat; Pentosan Polysulphate Sodium; Pentosane polysulfate sodique; Pentosano polisulfato de sodio; PZ-68; Sodium Pentosan Polysulphate; Sodium Xylanpolysulphate; SP-54.

Натрия Пентозана Полисульфат

CAS — 37319-17-8; 116001-96-8.
ATC — C05BA04.
ATC Vet — QC05BA04.

Description. Pentosan polysulfate sodium is a mixture of linear polymers of β-1→4-linked xylose, usually sulfated at the 2- and 3-positions and occasionally (approximately 1 in every 4 residues) substituted at the 2-position with 4-*O*-methyl-α-D-glucuronic acid 2,3-*O*-sulfate. The average molecular weight lies between 4000 and 6000 with a total molecular weight range of 1000 to 40 000.

Adverse Effects and Precautions

As for Heparin, p.1301. Gastrointestinal disturbances may also occur.

Uses and Administration

Pentosan polysulfate sodium is a heparinoid with anticoagulant and fibrinolytic properties; it may also have hypolipidaemic and anti-inflammatory effects. It is used in thromboembolic disorders, although its anticoagulant effect is less than that of heparin. It is also used in the management of interstitial cystitis (see below) and has been tried in a number of other conditions, including variant Creutzfeldt-Jakob disease (see below). Pentosan polysulfate sodium has been used orally, parenterally, and topically.

In the management of interstitial cystitis, pentosan polysulfate sodium is given orally in a dose of 100 mg three times daily.

Cystitis. Pentosan polysulfate sodium has been used in inflammatory conditions of the bladder, including interstitial cystitis (p.2179) and is thought to act by enhancing the protective effect of mucins at the bladder surface.[1] Studies have differed concerning its efficacy in the treatment of interstitial cystitis and an analysis[2] of placebo-controlled trials concluded that pentosan polysulfate sodium was more effective in treating pain, urgency, and frequency, but that the difference was small. Any benefit is usually apparent within 3 to 6 months and only occurs in a minority of patients.[3] Pentosan polysulfate sodium was reported[4] to have minimal long-term efficacy in a group of patients with severe or refractory interstitial cystitis.

Pentosan polysulfate sodium has also been reported[5-7] to be useful in the control of radiation-induced haemorrhagic cystitis (p.2178).

1. Anderson VR, Perry CM. Pentosan polysulfate: a review of its use in the relief of bladder pain or discomfort in interstitial cystitis. *Drugs* 2006; **66:** 821–35.
2. Hwang P, *et al*. Efficacy of pentosan polysulfate in the treatment of interstitial cystitis: a meta-analysis. *Urology* 1997; **50:** 39–43.
3. Anonymous. Pentosan for interstitial cystitis. *Med Lett Drugs Ther* 1997; **39:** 56.
4. Jepsen JV, *et al*. Long-term experience with pentosanpolysulfate in interstitial cystitis. *Urology* 1998; **51:** 381–7.
5. Parsons CL. Successful management of radiation cystitis with sodium pentosanpolysulfate. *J Urol (Baltimore)* 1986; **136:** 813–14.
6. Hampson SJ, Woodhouse CRJ. Sodium pentosanpolysulphate in the management of haemorrhagic cystitis: experience with 14 patients. *Eur Urol* 1994; **25:** 40–2.
7. Sandhu SS, *et al*. The management of haemorrhagic cystitis with sodium pentosan polysulphate. *BJU Int* 2004; **94:** 845–7.

Prostatitis. Pentosan polysulfate sodium is one of a number of drugs that have been tried in the management of prostatitis (p.2181). An improvement in symptoms was reported[1] in an uncontrolled study of oral pentosan polysulfate sodium in men with chronic prostatitis/chronic pelvic pain syndrome. A randomised study[2] using pentosan polysulfate sodium 300 mg three times daily found that symptoms were moderately or markedly improved at the end of the 16-week treatment period in more members of the active treatment group than in the group given placebo.

1. Nickel JC, *et al*. Pentosan polysulfate therapy for chronic nonbacterial prostatitis (chronic pelvic pain syndrome category II-IA): a prospective multicenter clinical trial. *Urology* 2000; **56:** 413–17.
2. Nickel JC, *et al*. Pentosan polysulfate sodium therapy for men with chronic pelvic pain syndrome: a multicenter, randomized, placebo controlled study. *J Urol (Baltimore)* 2005; **173:** 1252–5.

Variant Creutzfeldt-Jakob disease. Variant Creutzfeldt-Jakob disease (vCJD) is a transmissible spongiform encephalopathy believed to be caused by infection of the nervous system with prions. Pentosan polysulfate sodium has been tried in small numbers of patients with vCJD, although there is little published research data. In 2003 the UK Department of Health[1] took advice from the CJD Therapy Advisory Group and the CSM; both groups considered that there was insufficient information on which to base prescribing regimens, and further work was needed.

1. UK Department of Health. Use of pentosan polysulphate in the treatment of, or prevention of, vCJD. Available at: http://www.dh.gov.uk/en/Publichealth/Communicablediseases/CJD/CJDgeneralinformation/DH_4031039 (accessed 19/08/08)

Preparations

Proprietary Preparations (details are given in Part 3)
Arg.: Elmiron; ***Austral.:*** Elmiron†; ***Austria:*** Polyanion; ***Canad.:*** Elmiron; ***Fr.:*** Hemoclar; ***Ger.:*** Fibrezym; ***Hong Kong:*** Elmiron; SP 54†; ***Hung.:*** SP 54; ***Ital.:*** Fibrase; ***Malaysia:*** SP 54; ***Port.:*** Fibrocide; ***S.Afr.:*** Tavan-SP 54; ***Spain:*** Thrombocid; ***USA:*** Elmiron.

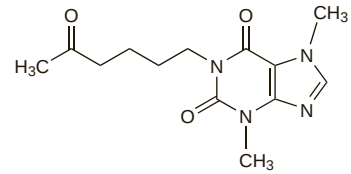
Multi-ingredient: ***Austria:*** Thrombocid; ***Cz.:*** Thrombocid; ***Ger.:*** Thrombocid; ***Hong Kong:*** Anso; Thrombocid; ***Port.:*** Thrombocid; ***Spain:*** Anso; ***Switz.:*** Thrombocid.

Pentoxifylline *(BAN, USAN, rINN)*

BL-191; Oksentifilin; Oxpentifylline; Pentoksifilin; Pentoksifilinas; Pentoksifylliini; Pentoxifilina; Pentoxifillin; Pentoxifylin; Pentoxifyllin; Pentoxifyllinum. 3,7-Dimethyl-1-(5-oxohexyl)xanthine.

Пентоксифиллин

$C_{13}H_{18}N_4O_3$ = 278.3.
CAS — 6493-05-6.
ATC — C04AD03.
ATC Vet — QC04AD03.



Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), and *US.*
Ph. Eur. 6.2 (Pentoxifylline). A white or almost white crystalline powder. Soluble in water; sparingly soluble in alcohol; freely soluble in dichloromethane. Protect from light.
USP 31 (Pentoxifylline). A white to almost white crystalline powder. Soluble in water; sparingly soluble in alcohol; freely soluble in chloroform and in methyl alcohol; slightly soluble in ether.

Adverse Effects

Pentoxifylline can cause nausea, gastrointestinal disturbances, dizziness, and headache. Flushing, angina, palpitations, cardiac arrhythmias, and hypersensitivity reactions may also occur. Bleeding events have been reported rarely, usually in association with bleeding risk factors.

Overdosage with pentoxifylline may be associated with fever, faintness, flushing, hypotension, drowsiness, agitation, and seizures.

Haemorrhage. Three major bleeding episodes including 2 fatal cerebral haemorrhages were reported in a group of patients receiving pentoxifylline 400 mg three times daily together with acenocoumarol for intermittent claudication.[1] Gastrointestinal bleeding occurred in a 67-year-old patient with a history of duodenal ulcer after a single dose of pentoxifylline for optic neuropathy.[2]

1. APIC Study Group. Acenocoumarol and pentoxifylline in intermittent claudication: a controlled clinical study. *Angiology* 1989; **40:** 237–48.
2. Oren R, *et al.* Pentoxifylline-induced gastrointestinal bleeding. *DICP Ann Pharmacother* 1991; **25:** 315–16.

Overdosage. A 22-year-old woman who took pentoxifylline 4 to 6 g with suicidal intent experienced severe bradycardia and first- and second-degree AV block; other effects included nausea, vomiting, abdominal cramps, hypokalaemia, excitation, and insomnia.[1] She recovered after intensive supportive and symptomatic treatment.

1. Sznajder IJ, *et al*. First and second degree atrioventricular block in oxpentifylline overdose. *BMJ* 1984; **288:** 26.

Precautions

Pentoxifylline should be avoided in cerebral haemorrhage, extensive retinal haemorrhage, severe cardiac arrhythmias, and acute myocardial infarction. It should be used with caution in patients with ischaemic heart disease or hypotension. The dose of pentoxifylline may need to be reduced in patients with hepatic or renal impairment (see under Uses and Administration, below).

Porphyria. Pentoxifylline is considered to be unsafe in patients with porphyria because it has been shown to be porphyrinogenic in *in-vitro* systems.

Interactions

Pentoxifylline may potentiate the effect of antihypertensives. High parenteral doses of pentoxifylline may enhance the action of insulin and oral hypoglycaemics in diabetic patients. Pentoxifylline should not be given with ketorolac as there is reported to be an increased risk of bleeding and/or prolongation of the prothrombin time. There may also be an increased risk of bleeding during use with meloxicam. Serum levels of theophylline may be raised by pentoxifylline.

Pharmacokinetics

Pentoxifylline is readily absorbed from the gastrointestinal tract but undergoes first-pass hepatic metabolism. Some metabolites are active. The apparent plasma half-life of pentoxifylline is reported to be 0.4 to 0.8 hours; that of the metabolites varies from 1.0 to 1.6 hours. In 24 hours most of a dose is excreted in the urine, mainly as metabolites, and less than 4% is recovered in the faeces. Elimination of pentoxifylline is decreased in elderly patients and patients with hepatic disease. Pentoxifylline and its metabolites are distributed into breast milk.

◊ References.

1. Beermann B, *et al*. Kinetics of intravenous and oral pentoxifylline in healthy subjects. *Clin Pharmacol Ther* 1985; **37:** 25–8.
2. Witter FR, Smith RV. The excretion of pentoxifylline and its metabolites into human breast milk. *Am J Obstet Gynecol* 1985; **151:** 1094–7.
3. Smith RV, *et al*. Pharmacokinetics of orally administered pentoxifylline in humans. *J Pharm Sci* 1986; **75:** 47–52.
4. Rames A, *et al*. Pharmacokinetics of intravenous and oral pentoxifylline in healthy volunteers and in cirrhotic patients. *Clin Pharmacol Ther* 1990; **47:** 354–9.
5. Paap CM, *et al*. Multiple-dose pharmacokinetics of pentoxifylline and its metabolites during renal insufficiency. *Ann Pharmacother* 1996; **30:** 724–9.

Uses and Administration

Pentoxifylline is a xanthine derivative used in the treatment of peripheral vascular disease (p.1178). Although often classified as a vasodilator, its primary action seems to be a reduction in blood viscosity, probably by effects on erythrocyte deformability and platelet adhesion and aggregation. It is reported to increase blood flow to ischaemic tissues and improve tissue oxygenation in patients with peripheral vascular disease and to increase oxygen tension in the cerebral cortex and in the cerebrospinal fluid; it has been used in cerebrovascular disorders. Pentoxifylline also inhibits production of the cytokine, tumour necrosis factor alpha (TNFα), and this property is under investigation in a number of diseases (see below).

In the treatment of peripheral vascular disease the usual oral dose is 400 mg three times daily in a modified-release formulation; this may be reduced to 400 mg twice daily for maintenance or if adverse effects are troublesome. Doses should be taken with meals to reduce gastrointestinal disturbances. In severe hepatic or renal impairment, doses may need to be reduced (see below). Beneficial effects may not be evident until after 2 to 8 weeks of treatment. Pentoxifylline may also be given parenterally.

◊ General references.

1. Ward A, Clissold SP. Pentoxifylline: a review of its pharmacodynamic and pharmacokinetic properties, and its therapeutic efficacy. *Drugs* 1987; **34:** 50–97.
2. Samlaska CP, Winfield EA. Pentoxifylline. *J Am Acad Dermatol* 1994; **30:** 603–21.

Administration in hepatic and renal impairment. The elimination half-life of pentoxifylline and its metabolites is significantly prolonged in patients with hepatic cirrhosis,[1] and some metabolites have a prolonged half-life in renal impairment.[2] The UK manufacturers state that in patients with severely impaired hepatic function the dose of pentoxifylline may need to be reduced, while accumulation may occur in patients with severe renal impairment (creatinine clearance less than 30 mL/minute) who receive more than 400 mg once or twice daily.

References.

1. Rames A, *et al*. Pharmacokinetics of intravenous and oral pentoxifylline in healthy volunteers and in cirrhotic patients. *Clin Pharmacol Ther* 1990; **47:** 354–9.
2. Paap CM, *et al*. Multiple-dose pharmacokinetics of pentoxifylline and its metabolites during renal insufficiency. *Ann Pharmacother* 1996; **30:** 724–9.

Inhibition of tumour necrosis factor alpha. Pentoxifylline inhibits production of tumour necrosis factor alpha (TNFα), a cytokine that is implicated in the pathogenesis of many diseases, and investigative work with pentoxifylline is being, or has been, carried out in many such disorders. Studies have been performed in patients with alcoholic hepatitis,[1] cardiomyopathy,[2] cerebral malaria,[3,4] diabetic nephropathy,[5] leishmaniasis,[6,7] leprosy,[8,9] membranous nephropathy,[10] radiation-induced damage,[11-13] severe sepsis or septic shock,[14] recurrent aphthous stomatitis,[15-17] and various vasculitic syndromes, including Behçet's syndrome.[18] Pentoxifylline has also been tried for improving graft survival in kidney transplantation.[19,20] For mention of a possible benefit in sarcoidosis, see p.1512. Although promising results