Uses and Administration

Patent blue V is injected subcutaneously to colour the lymph vessels so that they can be injected with a contrast medium. A dose of 0.25 mL of the 2.5% solution diluted with an equal volume of sodium chloride 0.9% or lidocaine hydrochloride 1% injected subcutaneously in each interdigital web space has been used. Additional injections at different sites may be required when the lower limbs are to be examined. A bluish skin colour may develop after injection but usually disappears after 24 to 48 hours.

Patent blue V is used as a food colour.

Malignant neoplasms of the breast. Intradermal injection of patent blue V at the site of a primary breast tumour has been used to identify the associated lymph nodes,[1] but concern has been expressed regarding possible long-term staining of the skin.[2]

1. Borgstein PJ, *et al.* Intradermal blue dye to identify sentinel lymph-node in breast cancer. *Lancet* 1997; **349:** 1668–9.
2. Giuliano AE. Intradermal blue dye to identify sentinel lymph node in breast cancer. *Lancet* 1997; **350:** 958.

Pegademase *(rINN)*

PEG-ADA; Pegademasa; Pégadémase; Pegademasum; PEG-Adenosine Deaminase.

Пэгадемаза

ATC — L03AX04.
ATC Vet — QL03AX04.

NOTE. Pegademase Bovine is *USAN*.

Profile

Pegademase is a conjugate of adenosine deaminase, an endogenous enzyme that converts adenosine to inosine, with a macrogol (polyethylene glycol). Pegademase bovine is used in the treatment of severe combined immunodeficiency disease (SCID) associated with a deficiency of adenosine deaminase, in patients who are not suitable for bone marrow transplantation or in whom the transplantation has failed. It is given by intramuscular injection once every 7 days, in an initial dose of 10 units/kg; increments of 5 units/kg are then given weekly up to a usual weekly maintenance dose of 20 units/kg. A single dose of 30 units/kg should not be exceeded. Pegademase should be given with caution to patients with thrombocytopenia and avoided if the latter is severe.

◊ References.

1. Hershfield MS, *et al.* Treatment of adenosine deaminase deficiency with polyethylene glycol-modified adenosine deaminase. *N Engl J Med* 1987; **316:** 589–96.
2. Anonymous. Pegademase. *Med Lett Drugs Ther* 1990; **32:** 87–8.
3. Lee CR, *et al.* Pegademase bovine: replacement therapy for severe combined immunodeficiency disease. *DICP Ann Pharmacother* 1991; **25:** 1092–5.
4. Shovlin CL, *et al.* Adult presentation of adenosine deaminase deficiency. *Lancet* 1993; **341:** 1471.
5. Hershfield MS. Adenosine deaminase deficiency: clinical expression, molecular basis, and therapy. *Semin Hematol* 1998; **35:** 291–8.
6. Husain M, *et al.* Burkitt's lymphoma in a patient with adenosine deaminase deficiency-severe combined immunodeficiency treated with polyethylene glycol-adenosine deaminase. *J Pediatr* 2007; **151:** 93–5.

Preparations

Proprietary Preparations (details are given in Part 3)
USA: Adagen.

Pegaptanib Sodium *(BANM, USAN, rINNM)*

EYE-001; Natrii Pegaptanibum; NX-1838; Pegaptanib Octasodium; Pegaptanib sodico; Pégaptanib Sodique.

Натрий Пегаптаниб

CAS — 222716-86-1.
ATC — S01LA03.
ATC Vet — QS01LA03.

Adverse Effects and Precautions

Endophthalmitis has been reported in patients given pegaptanib sodium and patients should be monitored for signs of infections for a week after the procedure. Retinal haemorrhage, retinal detachment, iatrogenic traumatic cataract, and raised intra-ocular pressure have also been reported. Immediate or delayed intravitreous haemorrhage may occur after injection. Common but less serious ocular adverse effects include eye pain, irritation, inflammation, blurred vision, visual disturbances, corneal oedema, punctate keratitis, and vitreous floaters.

Non-ocular adverse effects that have been reported include headache, rhinorrhoea, bronchitis, diarrhoea, dizziness, nausea, and urinary-tract infections.

Hypersensitivity reactions, including anaphylaxis or anaphylactoid reactions, and angioedema have been reported rarely within several hours of a dose.

Pegaptanib is contra-indicated in patients with active or suspected ocular or periocular infections.

◊ Data from two concurrent international multicentre prospective randomised controlled studies[1] were analysed to assess the safety of pegaptanib after 2 years of treatment for neovascular (wet) age-related macular degeneration. The most common ocular adverse effects were attributed to the injection procedure and were transient and mild to moderate in intensity. Failure to follow the injection preparation protocol accounted for most cases of endophthalmitis. The incidence of adverse effects associated with systemic inhibition of vascular endothelial growth factor or severe ocular inflammation, cataract progression, or glaucoma was not higher in the pegaptanib-treated patients compared with patients receiving sham injections. Overall, the safety profile of pegaptanib was favourable in these studies.

1. D'Amico DJ, *et al.* VEGF Inhibition Study in Ocular Neovascularization (V.I.S.I.O.N.) Clinical Trial Group. Pegaptanib sodium for neovascular age-related macular degeneration: two-year safety results of the two prospective, multicenter, controlled clinical trials. *Ophthalmology* 2006; **113:** 992–1001.

Uses and Administration

Pegaptanib is a pegylated modified oligonucleotide (aptamer) given as the sodium salt in the treatment of neovascular (wet) age-related macular degeneration. It is given by intravitreal injection into the affected eye in a dose of 300 micrograms once every 6 weeks. Stopping or withholding treatment should be considered if there has been no demonstrable benefit after 2 consecutive injections (i.e. at the 12-week visit).

Pegaptanib is also under investigation as an adjunct in the management of diabetic retinopathy.

Age-related macular degeneration. Pegaptanib is a pegylated modified oligonucleotide (aptamer) used in the treatment of age-related macular degeneration (AMD) (p.785). It binds to and inhibits vascular endothelial growth factor (VEGF), which is a stimulant of angiogenesis thought to play a role in the neovascularisation and retinal changes associated with AMD. Pegaptanib is a selective antagonist of VEGF.[1,2]

Positive outcomes have been reported from two concurrent international multicentre prospective randomised controlled studies.[3] Vision loss was prevented and mean visual acuity improved in patients given 6-weekly injections of 300 micrograms, 1 mg, or 3 mg for 48 weeks compared with patients receiving sham injections. No dose-response relationship was found. In order to assess the effects of long-term therapy, patients who had been given pegaptanib in the first part of the study were then randomised at week 54 to receive either pegaptanib for a further 48 weeks or stop treatment, and patients who had been given sham injections were similarly re-randomised.[4] Results showed that patients given pegaptanib for a second year continued to derive additional benefit. A systematic review[5] of 5 randomised controlled studies found that pegaptanib was effective in reducing the risk of loss of visual acuity.

1. Siddiqui MAA, Keating GM. Pegaptanib: in exudative age-related macular degeneration. *Drugs* 2005; **65:** 1571–7.
2. Chapman JA, Beckey C. Pegaptanib: a novel approach to ocular neovascularization. *Ann Pharmacother* 2006; **40:** 1322–6.
3. Gragoudas ES, *et al.* Pegaptanib for neovascular age-related macular degeneration. *N Engl J Med* 2004; **351:** 2805–16.
4. Chakravarthy U, *et al.*. VEGF Inhibition Study in Ocular Neovascularization (V.I.S.I.O.N.) Clinical Trial Group. Year 2 efficacy results of 2 randomized controlled clinical trials of pegaptanib for neovascular age-related macular degeneration. *Ophthalmology* 2006; **113:** 1508–21.
5. Vedula SS, Krzystolik MG. Antiangiogenic therapy with anti-vascular endothelial growth factor modalities for neovascular age-related macular degeneration. Available in The Cochrane Database of Systematic Reviews; Issue 2. Chichester: John Wiley; 2008 (accessed 06/06/08).

Preparations

Proprietary Preparations (details are given in Part 3)
Braz.: Macugen; ***Canad.:*** Macugen; ***Cz.:*** Macugen; ***Fr.:*** Macugen; ***Gr.:*** Macugen; ***Pol.:*** Macugen; ***Port.:*** Macugen; ***Singapore:*** Macugen; ***UK:*** Macugen; ***USA:*** Macugen.

Penicilloyl-polylysine

Benzylpenicilloyl-polylysine; Peniciloil polilisina; PO-PLL; PPL.

CAS — 53608-77-8.

Description. Penicilloyl-polylysine is a polypeptide compound formed by the interaction of a penicillanic acid and polylysine of an average degree of polymerisation of 20 lysine residues per molecule.

Pharmacopoeias. *US* includes a concentrated form.

USP 31 (Benzylpenicilloyl Polylysine Concentrate). It has a molar concentration of benzylpenicilloyl moiety of not less than 0.0125 M and not more than 0.020 M. It contains one or more suitable buffers. It is not intended for direct administration. pH of the concentrate is between 6.5 and 8.5. Store in airtight containers.

Adverse Effects and Precautions

Severe hypersensitivity reactions have occasionally been reported after use of penicilloyl-polylysine; a scratch test is recommended before intradermal use.

Uses and Administration

Penicilloyl-polylysine is used to detect penicillin hypersensitivity. It is generally indicated only for adults with a history of penicillin hypersensitivity. After a preliminary scratch test it may then be given by intradermal injection. The development, usually within 5 to 15 minutes, of a wheal, erythema, and pruritus is generally judged a positive reaction. The incidence of penicillin hypersensitivity is stated to be less than 5% in patients showing a negative reaction. Penicilloyl-polylysine does not detect those liable to suffer late reactions or reactions due to minor antigen determinants; these reactions require other tests. False-positive reactions to penicilloyl-polylysine also occur.

Preparations

USP 31: Benzylpenicilloyl Polylysine Injection.

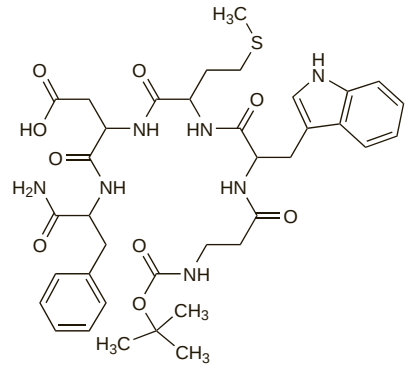
Proprietary Preparations (details are given in Part 3)
USA: Pre-Pen†.

Pentagastrin *(BAN, USAN, rINN)*

AY-6608; ICI-50123; Pentagastriini; Pentagastrina; Pentagastrine; Pentagastrinum. *tert*-Butyloxycarbonyl-[β-Ala[13]]gastrin-(13-17)-pentapeptide amide; Boc-β-Ala-Trp-Met-Asp-Phe—NH_2.

Пентагастрин

$C_{37}H_{49}N_7O_9S$ = 767.9.
CAS — 5534-95-2.
ATC — V04CG04.
ATC Vet — QV04CG04.



Pharmacopoeias. In *Br.* and *Chin.*

BP 2008 (Pentagastrin). A white or almost white powder. Practically insoluble in water; slightly soluble in alcohol; soluble in dimethylformamide and in 5M ammonia. Protect from light.

Adverse Effects

Pentagastrin may cause gastrointestinal effects including nausea and abdominal cramps. Cardiovascular effects including flushing of the skin, tachycardia, and hypotension have occasionally been reported. There may be headache, drowsiness, dizziness, and altered sensations in the extremities. Hypersensitivity reactions are rare.

Precautions

Pentagastrin should be given with care to patients with acute peptic ulceration or with active pancreatic, hepatic, or biliary-tract disease.

Uses and Administration

Pentagastrin is a synthetic pentapeptide that is not active when given by mouth but when given parenterally has effects similar to those of natural gastrin. Since it stimulates the secretion of gastric acid, pepsin, and intrinsic factor, it is used as a diagnostic agent to test the secretory action of the stomach. It has been used to diagnose disorders associated with increased or decreased gastric acid secretion and in the evaluation of gastric acid secretion following vagotomy or gastric resection. The usual dose is 6 micrograms/kg by subcutaneous or intramuscular injection. By intravenous infusion the dose is 600 nanograms/kg per hour, in sodium chloride 0.9%.

Pentagastrin stimulates the secretion of pancreatic enzymes and thus has been used as a test for pancreatic function. It has also been tried in the diagnosis of medullary carcinoma of the thyroid.

Preparations

BP 2008: Pentagastrin Injection.

Proprietary Preparations (details are given in Part 3)
Fr.: Peptavlon.

Black Pepper

Pepper; Pimenta; Piper.

CAS — 8006-82-4 (black pepper oil).

Pharmacopoeias. In *Chin.*, which describes both black and white pepper.

Profile

Black pepper is the dried unripe fruit of *Piper nigrum* (Piperaceae). It is used as a culinary spice and is included in some herbal remedies.

Pepper oil, obtained from black pepper, is used in aromatherapy.

White pepper is the ripe fruit with the outer part of the pericarp removed. It too is used as a culinary spice.