tients hypersensitive to iodine. Clearance of indocyanine green may be altered by drugs that interfere with liver function.

◊ References.

1. Jackson TL. Indocyanine green accused. *Br J Ophthalmol* 2005; **89:** 395–6.
2. Cheng SN, *et al.* Ocular toxicity of intravitreal indocyanine green. *J Ocul Pharmacol Ther* 2005; **21:** 85–93.

Hypersensitivity. A report of anaphylactoid reactions to indocyanine green in 3 patients.[1] The authors commented that of 20 reactions that had been reported 9 involved anaphylactoid shock (with 2 subsequent deaths) and 11 involved hypotension or bronchospasm; they suggested that such reactions were dose-dependent and had a non-immune mechanism.

1. Speich R, *et al.* Anaphylactoid reactions after indocyanine-green administration. *Ann Intern Med* 1988; **109:** 345–6.

Pharmacokinetics

After intravenous injection indocyanine green is rapidly bound to plasma protein. It is taken up by the liver and is rapidly excreted unchanged into the bile.

Uses and Administration

Indocyanine green is an indicator dye used for assessing cardiac output and liver function, and for examining the choroidal vasculature in ophthalmic angiography. It is also used to assess blood flow and haemodynamics in various organs including the liver.

The usual dose for cardiac assessment is 5 mg injected rapidly via a cardiac catheter. A suggested dose for children is 2.5 mg, and for infants 1.25 mg. Several doses need to be given to obtain a number of dilution curves. However, the total dose should not exceed 2 mg/kg.

The usual dose of indocyanine green for testing liver function is 500 micrograms/kg given intravenously.

Diagnostic use. Indocyanine green has been used to assess blood flow to various organs and in other haemodynamic studies. However, some methods of determination of indocyanine green clearance as a measure of liver blood flow have been questioned on the grounds that extraction of the dye by the liver is not complete as is often assumed.[1] Interindividual variability in indocyanine clearance may introduce further error.[2]

There have been reports of the use of indocyanine green to assess cerebral blood flow in children during cardiopulmonary bypass[3] and to measure plasma volume in neonates.[4] In ophthalmology, indocyanine green angiography is used to visualise the choroidal circulation,[5,6] and as a stain during surgical repair of macular holes.[7,8]

1. Skak C, Keiding S. Methodological problems in the use of indocyanine green to estimate hepatic blood flow and ICG clearance in man. *Liver* 1987; **7:** 155–62.
2. Bauer LA, *et al.* Variability of indocyanine green pharmacokinetics in healthy adults. *Clin Pharm* 1989; **8:** 54–5.
3. Roberts I, *et al.* Estimation of cerebral blood flow with near infrared spectroscopy and indocyanine green. *Lancet* 1993; **342:** 1425.
4. Anthony MY, *et al.* Measurement of plasma volume in neonates. *Arch Dis Child* 1992; **67:** 36–40.
5. Owens SL. Indocyanine green angiography. *Br J Ophthalmol* 1996; **80:** 263–6.
6. Dzurinko VL, *et al.* Intravenous and indocyanine green angiography. *Optometry* 2004; **75:** 743–55.
7. Rodrigues EB, *et al.* Intravitreal staining of the internal limiting membrane using indocyanine green in the treatment of macular holes. *Ophthalmologica* 2005; **219:** 251–62.
8. Lee KL, *et al.* A comparison of outcomes after indocyanine green and trypan blue assisted internal limiting membrane peeling during macular hole surgery. *Br J Ophthalmol* 2005; **89:** 420–4.

Preparations

USP 31: Indocyanine Green for Injection.

Proprietary Preparations (details are given in Part 3)
Fr.: Infracyanine; ***Ger.:*** ICG-Pulsion; ***Gr.:*** ICG-Pulsion; ***Israel:*** IC Green; ICG-Pulsion; ***Neth.:*** ICG-Pulsion; ***USA:*** Cardio-Green†; IC Green.

Inhibin

Inhibina.

Ингибин

CAS — 57285-09-3.

NOTE. The name inhibin has also been used as a proprietary name for hydroquinine hydrobromide (p.2322).

Profile

Inhibin is a dimeric glycoprotein secreted by the testes and ovaries that suppresses secretion of follicle-stimulating hormone by the pituitary. As a member of the transforming growth factor-β family, it is also involved in mediation and regulation of many other physiological processes. Its two isoforms inhibin A and inhibin B have been widely investigated for their potential as markers of male infertility, ovarian cancer, and placental function. It has also been studied as a prognostic indicator of ovarian function in women undergoing assisted reproduction.

◊ References.

1. Kumanov P, *et al.* Significance of inhibin in reproductive pathophysiology and current clinical applications. *Reprod Biomed Online* 2005; **10:** 786–812.

Inosine *(rINN)*

Hypoxanthine Riboside; Inosina; Inosinum. 6,9-Dihydro-9-β-D-ribofuranosyl-1*H*-purin-6-one.

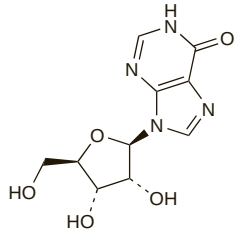
Инозин

$C_{10}H_{12}N_4O_5$ = 268.2.

CAS — 58-63-9.

ATC — D06BB05; G01AX02; S01XA10.

ATC Vet — QD06BB05; QG01AX02; QS01XA10.



Pharmacopoeias. In *Chin.*

Profile

Inosine has been used in the treatment of anaemias and cardiovascular, liver, and skin disorders and has been used as a tonic.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: *Cz.:* Laevadosin†; ***Ital.:*** Neo-Eparbiol†; ***Spain:*** Nutracel; Rubrocortin†.

Inositol

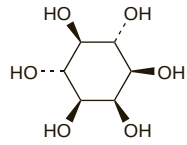
i-Inositol; *meso*-Inositol; Inositoli; Inositolum; *myo*-Inositolum; mio-Inozytol; myo-Inositol; myo-Inositoli; myo-Inositolum. *myo*-Inositol.

$C_6H_{12}O_6$ = 180.2.

CAS — 87-89-8.

ATC — A11HA07.

ATC Vet — QA11HA07.



Pharmacopoeias. In *Eur.* (see p.vii). Also in *USNF.*
Ph. Eur. 6.2 (*myo*-Inositol). A white or almost white, crystalline powder. Very soluble in water; practically insoluble in alcohol.
USNF 26 (Inositol). A white or almost white, crystalline powder. Very soluble in water; practically insoluble in dehydrated alcohol and in ether.

Profile

Inositol, an isomer of glucose, has traditionally been considered to be a vitamin B substance although it has an uncertain status as a vitamin and a deficiency syndrome has not been identified in man. Sources of inositol include whole-grain cereals, fruits, and plants, in which it occurs as the hexaphosphate, fytic acid. It also occurs in both vegetables and meats in other forms. The usual daily intake of inositol from the diet is about 1 g. It is an ingredient of numerous vitamin preparations and dietary supplements, and of preparations promoted for a wide variety of disorders.

Inositol appears to be involved physiologically in lipid metabolism and has been tried, with little evidence of efficacy, in disorders associated with fat transport and metabolism. It has been investigated in the treatment of depression and anxiety, in diabetic neuropathy, and in neonatal respiratory distress syndrome and retinopathy of prematurity.

Neonatal respiratory distress syndrome. Inositol supplementation has been tried in premature infants with respiratory distress syndrome (p.1508). A meta-analysis[1] found that infants given inositol had improved survival and lower rates of bronchopulmonary dysplasia and retinopathy of prematurity than those given placebo.

1. Howlett A, Ohlsson A. Inositol for respiratory distress syndrome in preterm infants. Available in The Cochrane Database of Systematic Reviews; Issue 4. Chichester: John Wiley; 2003 (accessed 19/04/06).

Preparations

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

Multi-ingredient: *Arg.:* Bifena; ***Austral.:*** Hair and Skin Formula†; Liv-Detox†; ***Austria:*** Aslavital; Lemazol; ***Braz.:*** Hecrosine B12†; Hepatogenol†; Hormo Hepatico†; Metiocolin B12; Xantinon Complex; ***Canad.:*** Amino-Cerv; ***Chile:*** Hepabil; ***Cz.:*** Lipovitan†; ***Fr.:*** Hepagrume; ***Ger.:*** Lipovitan†; ***Hong Kong:*** Bilsan; Lipochol; ***India:*** Alcrin-M; Delphicol; ***Indon.:*** Naturica DFM; ***Ital.:*** Digelax†; Hepatos B12; Porfirin 12; Stimolfit; ***S.Afr.:*** Hepavite; Prohep; ***Spain:*** Complidermol†; Dertrase; Policolinosil; Tri Hachemina; ***Thai.:*** Lipochol; Liporon; ***UK:*** Lipotropic Factors; ***USA:*** Amino-Cerv.

Interleukins

Интерлейкины

Profile

Interleukins are cytokines (p.2292) that are thought to target leukocytes. As with other cytokines, interleukins are involved in the regulation of normal immune and inflammatory responses and have both proinflammatory and anti-inflammatory actions. Interleukins used clinically include interleukin-1 (p.2325), interleukin-2 (p.735), and aldesleukin (recombinant interleukin-2) (p.735). Interleukins under investigation include interleukin-3 (p.1073), ilodecakin (recombinant interleukin-10) (p.2326), and edodekin alfa (recombinant interleukin-12) (p.2326).

Interleukins have also been implicated in the pathogenesis of some diseases, and inhibitors of interleukins or their receptors may therefore be of therapeutic value.

Antagonists acting against interleukin receptors used clinically include anakinra (recombinant interleukin-1 receptor antagonist) (p.19), basiliximab (p.1821), and daclizumab (p.1833), which are all interleukin-2 receptor antibodies, and tocilizumab (recombinant interleukin-6 receptor antibody) (p.2326) Inolimomab (p.1835) is an interleukin-2 receptor antibody under investigation.

Antibodies targeting interleukins have been developed and those under investigation include mepolizumab (recombinant interleukin-5 antibody) (p.743) and elsilimomab (recombinant interleukin-6 antibody) (p.2326).

Interleukin fusion toxins are produced by combining interleukin protein sequences with a bacterial toxin (e.g. diphtheria or pseudomonas) with the aim of inhibiting specific interleukin activity. Those under investigation include interleukin-2 fusion toxins (p.2326), interleukin-4 fusion toxins, and cintredekin besudotox, an interleukin-13 fusion toxin.

Soluble interleukin receptors may have therapeutic value and are also being tried therapeutically: rilonacept (p.2379) is an interleukin-1 blocker used in the treatment of a group of rare inherited auto-inflammatory disorders; interleukin-4 receptor is also being investigated.

Inhibitors of cysteine protease IL-1β converting enzyme (ICE) have been investigated as a means of reducing secretion of interleukin-1β (p.2325).

Interleukin-1

Catabolin; Endogenous Pyrogen; Haematopoietin-1; IL-1; Interleucina 1; Leucocyte Endogenous Mediator; Lymphocyte Activating Factor.

Интерлейкин-1

Profile

Interleukin-1 is one of a number of polypeptides known collectively as interleukins (p.2325). It is produced in blood and a variety of tissues by mononuclear phagocytes involved in the complex regulation of immune responses. It enhances the immune response and has proinflammatory and pyrogenic properties. There are two distinct forms, interleukin-1α and interleukin-1β.

Interleukin-1 may also be produced by recombinant DNA technology, and human recombinant interleukin-1β has been used as an adjunct to cancer chemotherapy or radiotherapy for its haematopoietic activity. It has also been investigated for its immunotropic effects in purulent infections of the lung and ear, although it has no intrinsic antibacterial activity. Adverse effects of interleukin-1 include fever, chills, flu-like symptoms, hypotension, and pain, swelling, and erythema at the site of subcutaneous injection.

Interleukin-1 is also implicated in the pathogenesis of some diseases, particularly auto-immune and inflammatory diseases such as rheumatoid arthritis and inflammatory bowel disease.

Preparations

Proprietary Preparations (details are given in Part 3)
Rus.: Betaleukin.