

as incadronate disodium for hypercalcaemia of malignancy in a dose of 10 mg over 2 to 4 hours; if necessary this dose may be repeated at intervals of no less than 1 week. Hypocalcaemia and hypotension may occur. Incadronate is under investigation for the treatment of bone metastases in patients with breast cancer.

#### References.

- Usui T, *et al.* Pharmacokinetics of incadronate, a new bisphosphonate, in healthy volunteers and patients with malignancy-associated hypercalcaemia. *Int J Clin Pharmacol Ther* 1997; **35**: 239–44.
- Matsumoto T, *et al.* Comparative study of incadronate and elcatonin in patients with malignancy-associated hypercalcaemia. *J Int Med Res* 2002; **30**: 230–43.

#### Preparations

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

**Jpn:** Bisphonal; **Philipp.:** Bisphonal; **Thai:** Bisphonal.

#### Ipriflavone (rINN)

FL-113; Ipriflavona; Ipriflavonum. 7-Isopropoxyisoflavone.

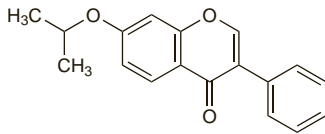
Иприфлавон

$C_{18}H_{16}O_3 = 280.3$ .

CAS — 35212-22-7.

ATC — M05BX01.

ATC Vet — QM05BX01.



#### Profile

Ipriflavone is a synthetic isoflavonoid that inhibits resorption of bone and is available in some countries for the treatment of osteoporosis (p.1084). It is given orally in a dose of 200 mg three times daily.

**Osteoporosis.** Despite an earlier favourable report,<sup>1</sup> a prospective randomised controlled study in postmenopausal women with low bone mass failed to show prevention of bone loss or improvements in markers of bone metabolism with ipriflavone.<sup>2</sup> There was also a significant incidence of lymphopenia with the drug.

- Agnusdei D, *et al.* Effects of ipriflavone on bone mass and bone remodeling in patients with established postmenopausal osteoporosis. *Curr Ther Res* 1992; **51**: 82–91.
- Alexandersen P, *et al.* Ipriflavone in the treatment of postmenopausal osteoporosis: a randomized controlled trial. *JAMA* 2001; **285**: 1482–8.

#### Preparations

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**Arg.:** Ipristenf; **Braz.:** Osteoplus; Rebone; **Ital.:** Iprostenf; Osteofix; **Jpn:** Osten.

**Multi-ingredient:** **Indon.:** Vosteon; **UK:** Osteopra.

#### Medronate

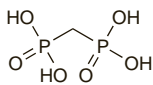
##### Medronic Acid (BAN, USAN, pINN)

Acid medronique; Acide Médronique; Ácido medrónico; Acidum medronicum. Methylenebis(phosphonic acid).

Медроновая Кислота

$CH_6O_6P_2 = 176.0$ .

CAS — 1984-15-2.



##### Medronate Disodium (USAN, pINN)

Disodium Medronate (BANM); Disodium Methylene Diphosphate; MDP; Medronas Dinatricum; Médronate Disodique; Medronato disódico. Disodium dihydrogen methylenediphosphate.

Динатрий Медронат

$CH_4Na_2O_6P_2 = 220.0$ .

CAS — 25681-89-4.

#### Profile

Medronate is a bisphosphonate with general properties similar to those of the other bisphosphonates (p.1089). It has a strong affinity for bone. Complexes of medronate disodium and stannous

chloride or fluoride, or medronic acid, stannous chloride dihydrate, and ascorbic acid, are labelled with radioactive technetium-99m (p.2055) and used diagnostically as bone scanning agents; they are given intravenously.

**Hypersensitivity.** For reference to a severe allergic reaction attributed to the medronate component of a radiopharmaceutical, see under Adverse Effects and Precautions of Bisphosphonates, p.1091.

#### Minodronate

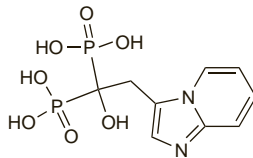
##### Minodronic Acid (rINN)

Acide Minodronique; Ácido minodrónico; Acidum minodronicum; YH-529; YM-529. (1-Hydroxy-2-imidazo[1,2-a]pyridin-3-ylethylidene)diphosphonic acid.

Минодроновая Кислота

$C_9H_{12}N_2O_7P_2 = 322.1$ .

CAS — 127657-42-5.



#### Profile

Minodronate is a bisphosphonate under investigation for osteoporosis, multiple myeloma, and bone metastases.

#### Neridronate

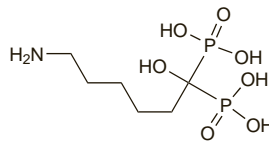
##### Neridronic Acid (rINN)

Acide Néridronique; Ácido neridrónico; Acidum neridronicum; AHDP; AH-HexBP; Aminohexane Diphosphate. (6-Amino-1-hydroxyhexylidene)diphosphonic acid.

Неридроновая Кислота

$C_6H_{17}NO_7P_2 = 277.1$ .

CAS — 79778-41-9.



##### Neridronate Sodium (rINN)

Natrii Neridronas; Néridronate de Sodium; Neridronato sódico.

Натрий Неридронат

#### Profile

Neridronate is an aminobisphosphonate with similar properties to those of the bisphosphonates in general (p.1089). It inhibits bone resorption and is given intravenously as the sodium salt in the management of osteogenesis imperfecta (p.1083); it has been used in the treatment of malignant hypercalcaemia (p.1083) and diseases associated with excessive bone turnover such as Paget's disease of bone (p.1086) and osteoporosis (p.1084).

#### References.

- O'Rourke NP, *et al.* Treatment of malignant hypercalcaemia with aminohexane bisphosphonate (neridronate). *Br J Cancer* 1994; **69**: 914–17.
- Filipponi P, *et al.* Paget's disease of bone: benefits of neridronate as a first treatment and in cases of relapse after clodronate. *Bone* 1998; **23**: 543–8.
- Adami S, *et al.* Short-term intravenous therapy with neridronate in Paget's disease. *Clin Exp Rheumatol* 2002; **20**: 55–8.
- Adami S, *et al.* Intravenous neridronate in adults with osteogenesis imperfecta. *J Bone Miner Res* 2003; **18**: 126–30.
- Braga V, *et al.* Intravenous intermittent neridronate in the treatment of postmenopausal osteoporosis. *Bone* 2003; **33**: 342–5.

#### Preparations

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

**Ital.:** Nerixia.

#### Olpadronate

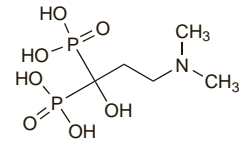
##### Olpadronic Acid (rINN)

Acide Olpadronique; Ácido olpadrónico; Acidum olpadronicum; Alpadronic Acid. [3-(Dimethylamino)-1-hydroxypropylidene]diphosphonic acid.

Олпадроновая Кислота

$C_5H_{15}NO_7P_2 = 263.1$ .

CAS — 63132-39-8.



##### Olpadronate Disodium

IG-8801; Sodium Olpadronate.

$C_5H_{13}NNa_2O_7P_2 = 307.1$ .

CAS — 121368-58-9.

#### Profile

Olpadronate is an aminobisphosphonate with similar properties to those of the bisphosphonates in general (p.1089). It has been investigated for the treatment of Paget's disease of bone and osteogenesis imperfecta.

#### References.

- González DC, Mautalen CA. Short-term therapy with oral olpadronate in active Paget's disease of bone. *J Bone Miner Res* 1999; **14**: 2042–7.
- Soerdjbalie-Maikoe V, *et al.* Strontium-89 (Metastron) and the bisphosphonate olpadronate reduce the incidence of spinal cord compression in patients with hormone-refractory prostate cancer metastatic to the skeleton. *Eur J Nucl Med Mol Imaging* 2002; **29**: 494–8.
- Cremers SCLM, *et al.* Relationships between pharmacokinetics and rate of bone turnover after intravenous bisphosphonate (olpadronate) in patients with Paget's disease of bone. *J Bone Miner Res* 2003; **18**: 868–75.
- Eekhoff MEMW, *et al.* Determinants of induction and duration of remission of Paget's disease of bone after bisphosphonate (olpadronate) therapy. *Bone* 2003; **33**: 831–8.
- Sakkers R, *et al.* Skeletal effects and functional outcome with olpadronate in children with osteogenesis imperfecta: a 2-year randomised placebo-controlled study. *Lancet* 2004; **363**: 1427–31.

#### Oxidronate

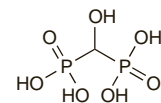
##### Oxidronic Acid (BAN, USAN, pINN)

Acide Oxidronique; Ácido oxidrónico; Acidum Oxidronicum. (Hydroxymethylene)diphosphonic acid.

Оксидроновая Кислота

$CH_6O_7P_2 = 192.0$ .

CAS — 15468-10-7.



##### Oxidronate Disodium (pINN)

Disodium Oxidronate; HMDP; Oxidronas Dinatricum; Oxidronate Disodique; Oxidronate Sodium; Oxidronato disódico; Sodium Oxidronate (BANM). Disodium (hydroxymethylene)diphosphate.

Динатрий Оксидронат

$CH_4Na_2O_7P_2 = 236.0$ .

CAS — 14255-61-9.

#### Profile

Oxidronate is a bisphosphonate with general properties similar to those of the other bisphosphonates (p.1089). It has a strong affinity for bone. A chelate of oxidronate disodium with radioactive technetium-99m (p.2055) is used diagnostically as a bone scanning agent; it is given intravenously.