THE MERCK INDEX

AN ENCYCLOPEDIA OF
CHEMICALS, DRUGS, AND BIOLOGICALS

FOURTEENTH EDITION

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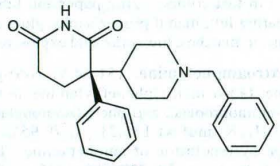
2945. Dexetimide. [21888-98-2] (3*S*)-3-Phenyl-1′-(phenylmethyl)-[3,4′-bipiperidine]-2,6-dione; (*S*)-(+)-2-(1-benzyl-4-piperidyl)-2-phenylglutarimide; (+)-3-(1-benzyl-4-piperidyl)-3-phenylpiperidine-2,6-dione; (+)-1-benzyl-4-(2,6-dioxo-3-phenyl-3-piperidyl)piperidine; dextrobenzetimide; dexbenzetimide. $C_{23}H_{26}N_2O_2$; mol wt 362.46. C 76.21%, H 7.23%, N 7.73%, O 8.83%. The dextroenantiomer responsible for the pharmacological activity of racemic benzetimide, *q.v.* Resolution of isomers and comparative pharmacology: Janssen *et al., Arzneim.-Forsch.* **21,** 1365 (1971). Abs config studies: van Wijngaarden *et al., Life Sci.* **9,** part 1, 1289 (1970); Spek *et al., Nature* **232,** 575 (1971). Clinical trials: De Smedt *et al., J. Clin. Pharmacol.* **10,** 207 (1970).

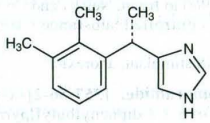


Crystals, mp 181-183°. $[\alpha]_D^{20}$ +125° (chloroform).

Hydrochloride. [21888-96-0] R-16470; Tremblex. $C_{23}H_{26}N_2O_2$.HCl; mol wt 398.93. Crystals, mp 270-275°. $[\alpha]_D^{20}$ +125° (methanol). LD_{50} i.v. in rats: 45 mg/kg (Janssen).

THERAP CAT: Antiparkinsonian.

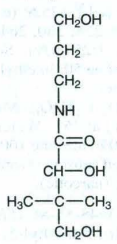
2946. Dexmedetomidine. [113775-47-6] 4-[(1*S*)-1-(2,3-Dimethylphenyl)ethyl]-1*H*-imidazole; *d*-medetomidine; MPV-1440. $C_{13}H_{16}N_2$; mol wt 200.28. C 77.96%, H 8.05%, N 13.99%. α_2-Adrenergic agonist; (+)-isomer of medetomidine, *q.v.* Prepn: A. J. Karjalainen *et al.,* **GB 2206880**; *eidem,* **US 4910214** (1989, 1990 both to Farmos). Physical properties: R. Rajala *et al., Eur. J. Pharm. Sci.* **1,** 219 (1994). Clinical pharmacokinetics: P. Talke *et al, Anesth. Analg.* **85,** 1136 (1997). Clinical evaluation as anesthetic adjunct: J. Jalonen *et al., Anesthesiology* **86,** 331 (1997). Review of pharmacology and clinical experience for sedation of patients in intensive care: N. Bhana *et al., Drugs* **59,** 263-270 (2000).



Hydrochloride. [145108-58-3] Precedex. $C_{13}H_{16}CN_2$.HCl; mol wt 248.75. White or almost white crystalline powder, mp 156.5-157.5°. d 1.17 g/cm^3. $[\alpha]$ +52.4° (c = 1 in water). pH of 1% soln in water: 4.3.

THERAP CAT: Sedative; analgesic.

2947. Dexpanthenol. [81-13-0] 2,4-Dihydroxy-*N*-(3-hydroxypropyl)-3,3-dimethylbutanamide; D(+)-α,γ-dihydroxy-*N*-(3-hydroxypropyl)-β,β-dimethylbutyramide; pantothenylol; *N*-pantoyl-3-propanolamine; pantothenol; pantothenyl alcohol; Alcopan-250; Intrapan; Pantenyl; Panthoderm; Motilyn; Bepanthen; Cozyme; Ilopan; Urupan. $C_9H_{19}NO_4$; mol wt 205.25. C 52.67%, H 9.33%, N 6.82%, O 31.18%. Prepd by the addition of propanolamine to optically active α,γ-dihydroxy-β,β-dimethylbutyrolactone: Schnider, *Jubilee Vol. Emil Barell* **1946,** 85; **CH 227706** (1943); **GB 582156** (1946); **US 2413077** (1946 to Hoffmann-La Roche). Only the D(+)-form has vitamin activity.



Viscous, somewhat hygroscopic liq. Slightly bitter taste. d_{20}^{20} 1.2. $bp_{0.02}$ 118-120°. Easily dec on distn. $[\alpha]_D^{20}$ +29.5° (c = 5). n_D^{20} 1.497. Freely sol in water, alcohol, methanol. Slightly sol in ether. Natural pH about 9.5. Reasonably stable to usual sterilization time and temp in aq solns adjusted to pH 3.0-4.0, but long heating causes racemization. Hydrolyzed by alkali and strong acid. Usually more stable than salts of pantothenic acid if pH can be adjusted between 3 and 5. For add'l stability data *see* Rubin, *J. Am. Pharm. Assoc. Sci. Ed.* **37,** 502 (1948). Aq solns can be stabilized with pantolactone: **US 2898373** (1959).

***dl*-Form.** Panthenol.

THERAP CAT: Cholinergic; *dl*-form as vitamin.

THERAP CAT (VET): Nutritional factor. Dietary source of pantothenic acid.

2948. Dextran. [9004-54-0] Gentran; Hemodex; Intradex; Promit. A term applied to polysaccharides produced by bacteria growing on a sucrose substrate, contg a backbone of D-glucose units linked predominantly α-D(1 → 6). Several organisms produce dextrans but only *Leuconostoc mesenteroides* and *L. dextranicum (Lactobacteriaceae)* have been used commercially. Chemical and physical properties of the dextrans vary with the methods of production. Native dextrans usually have high mol wt; lower mol wt clinical dextrans usually prepared by depolymerization of native dextrans or by synthesis. All dextrans are composed exclusively of α-D-glucopyranosyl units, differing only in degree of branching and chain length. Prepn: Tarr, Hibbert, *Can. J. Res.* **5,** 414 (1931); Novak, Stoycos, **US 2841578** (1958 to Commonwealth Eng. of Ohio). Enzymic synthesis: Sugg, Hehre, *J. Immunol.* **43,** 119 (1942); Behrens, Ringpfeil, **US 3044940** (1962 to Serum Werk Bernburg). The crude dextran may be isolated from the culture by precipitation with methanol. Continuous dialysis process: Shurter, **US 2717853** (1955 to C.S.C.). Elimination of pyrogens: Levi, Lozinski, **US 2762727** (1956 to Frosst). Method of producing clinical dextran: Novak, Witt, **US 2972567** (1961). Structure studies: Fowler *et al., Can. J. Res.* **B15,** 486 (1937); Fairhead *et al., ibid.* **B16,** 151 (1938); Peat *et al., J. Chem. Soc.* **1939,** 581; Goldstein, Whelan, *ibid.* **1962,** 170, 176. ^{13}C-NMR structure study: F. R. Seymour *et al., Carbohydr. Res.* **51,** 179 (1976). *Reviews:* Evans, Hibbert, *Adv. Carbohydr. Chem.* **2,** 204 (1946); Neely, *ibid.* **15,** 341 (1960); Ricketts, *Prog. Org. Chem.* **5,** 73 (1961); Murphy, Whistler, in *Industrial Gums,* R. L. Whistler, Ed. (Academic Press, New York, 2nd ed., 1973) pp 513-542.

Dextran 40. LMD; LMWD; LVD; Gentran 40; Rheomacrodex. Produced by action of *L. mesenteroides* on sucrose; average mol wt: 40,000.

Dextran 70. Gentran 70; Hyskon; Macrodex. Average mol wt: 70,000.

USE: In soft center confections, as a partial substitute for barley malt. Mixed ethers and esters of dextran can be used in lacquers.

THERAP CAT: Plasma volume expander; Dextran 40 also as blood flow adjuvant.

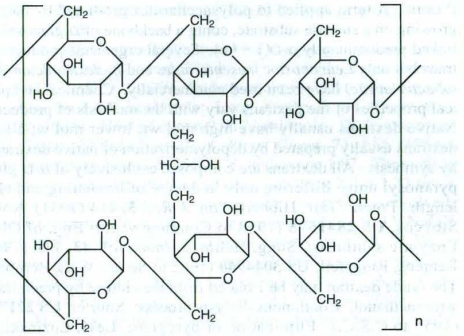
THERAP CAT (VET): Plasma extender.

2949. Dextranase. [9025-70-1] α-1,6-Glucan 6-glucanohydrolase; EC 3.2.1.11. Enzyme which hydrolyzes the α-1 → 6 glucosidic linkages of the bacterial polysaccharide dextran. ***Endodextranases*** (dextranases which preferentially split glucosidic linkages remote from end groups) are secreted by various molds and a few bacteria. ***Exodextranases*** occur predominantly in mammalian tissues. Prepn: from *Penicillium lilacinum, P. funiculosum,* and *Verticillium coccorum,* Nordström, Hultin, *Sven. Kem. Tidskr.* **60,** 283 (1948), *C.A.* **43,** 3050i (1949); from *Aspergillus,* Carlson, Carlson, *Science* **115,** 43 (1952), *eidem,* **US 2709150** (1955 to Enzymatic Chemicals), *eidem,* **US 2716084**, and Novak, Stoycos, **US 2841578** (1955 and 1958 both to Commonwealth Eng. of Ohio); from *P. lilacinum, P. funiculosum, P. verruculosum,* and *Spicaria violacea,* Tsuchiya *et al.,* **US 2742399** and Corman, Tsuchiya, **US 2776925** (1956 and 1957 both to U.S. Secy. Agr.); from *P. lilacinum,* Charles, Farrell, *Can. J. Microbiol.* **3,** 239 (1957); from *Lactobacillus bifidus,* Bailey, Clarke, *Biochem. J.* **72,** 49 (1959). Tested as dental caries-control agent in hamsters: Fitzgerald *et al., J. Am. Dent. Assoc.* **76,** 301 (1968). *Review:* E. H. Fischer, E. A. Stein, "Cleavage of *O*- and *S*-Glycosidic Bonds (Survey)" in *The Enzymes* **vol. 4,** P. D.

Boyer *et al.*, Eds. (Academic Press, New York, 2nd ed., 1960) pp 304-307.

USE: In prepn of dextran for clinical use; in dentifrices.

2950. Dextranomer. [56087-11-7] Dextran 2,3-dihydroxypropyl 2-hydroxy-1,3-propanediyl ethers; Debrisan; Debrisorb. Three-dimensional hydrophilic network of a dextran polymer, linked by cross-chains of epichlorohydrin, *q.v.*; it absorbs moisture and small molecules from suppurating wounds. Chronic tissue response to implantation: J. Falk, G. Tollerz, *Clin. Ther.* **1**(3), 185 (1977). Potential allergic contact sensitization in guinea pigs: G. Jonsson, *ibid.* **1**(4), 260 (1978). Efficacy in treatment of ulcers and wounds: J. Soul, *Br. J. Clin. Pract.* **32,** 172 (1978); P. N. Sawyer *et al., Surgery* **85,** 201 (1979); S. Di Mascio, *Am. J. Nurs.* **79,** 684 (1979). *Review:* R. C. Heel *et al., Drugs* **18,** 89-102 (1979).



Insol in all solvents; stable in water, salt solns and in alkaline and weakly acidic soln.

THERAP CAT: Vulnerary.

2951. Dextran Sulfate Sodium. [9011-18-1] Dextran sulfuric acid ester sodium salt; Asuro; Colyonal; Dexulate; Dextrarine; MDS. Heparin-like polysaccharide containing approx. 17% S with up to three sulfate groups per glucose molecule. Mol wt ranges from 4,000-500,000 Da; variations in mol wt are associated with differences in biological activity. Prepn, properties and anticoagulant activity: A. Grönwall *et al., Upsala Laekarefoeren. Foerh.* **50,** 397 (1945); C. R. Ricketts, *Biochem. J.* **51,** 129 (1952). Evaluation of toxicity as a function of mol wt: K. W. Walton, *Br. J. Pharmacol.* **9,** 1 (1954); of carcinogenicity: I. Hirono *et al., Cancer Lett.* **18,** 29 (1983). Use in serum HDL cholesterol determn: P. R. Finley *et al., Clin. Chem.* **24,** 931 (1978); G. R. Warnick *et al., ibid.* **28,** 1379 (1982). Antiscrapie effect: B. Ehlers, H. Diringer, *J. Gen. Virol.* **65,** 1325 (1984); R. H. Kimberlin, C. A. Walker, *Antimicrob. Agents Chemother.* **30,** 409 (1986). Anti-HIV-1 activity *in vitro:* H. Mitsuya *et al., Science* **240,** 646 (1988); M. Baba *et al., Proc. Natl. Acad. Sci. USA* **85,** 6132 (1988).

White powder from alcohol + ether. Freely sol in water. Activity about 17 international heparin units/mg. Aq solns must be buffered (*e.g.*, with sodium bicarbonate) to prevent dec during autoclaving.

USE: Clinical reagent (HDL cholesterol determn).

THERAP CAT: Anticoagulant.

2952. Dextri-Maltose®. [8006-91-5] Maltose and dextrins obtained by enzymic action of barley malt on corn flour.

Light, amorphous powder. Readily sol in water or milk. One leveled tablespoonful (8 grams) supplies 27 calories.

USE: As carbohydrate modifier for use with milk and milk products in infants' formulas.

2953. Dextrin. [9004-53-9] Pyrodextrin; torrefaction dextrin. $(C_6H_{10}O_5)_n.xH_2O$. Produced by the dry heating of unmodified starches. The term also includes products resulting from enzyme or acid-catalyzed hydrolysis of wet starch. *Review:* R. W. Satterthwaite, D. J. Iwinski, in *Industrial Gums*, R. L. Whistler, Ed. (Academic Press, New York, 2nd ed., 1973) pp 577-599.

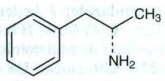
British gum. Starch gum. Produced at high temp in the absence of acid. Dark brown color, odorous. High viscosity; very sol in cold water. Does not reduce Fehling's soln; gives reddish-brown color with iodine.

Canary dextrin. Yellow dextrin. Hydrolyzed at high temp for long period of time in the presence of small amts of acid. Light brown to yellow color, slight odor. Low viscosity; very sol in cold water.

White dextrin. Hydrolyzed at low temp for short period of time in the presence of large amts of acid. White color, odorless. Slightly sol in cold water giving a red color with iodine. Very sol in hot water giving a blue color with iodine.

USE: Excipient for dry extracts and pills; for preparing emulsions and dry bandages; for thickening dye pastes and mordants used in printing fabrics in fast colors; sizing paper and fabrics; printing tapestries; preparing felt; manuf printer's inks, glues and mucilage; polishing cereals; in matches, fireworks, and explosives.

2954. Dextroamphetamine. [51-64-9] (α*S*)-α-Methylbenzeneethanamine; (+)-α-methylphenethylamine; *d*-amphetamine; (*S*)-1-phenyl-2-aminopropane; *d*-β-phenylisopropylamine; dexamphetamine. $C_9H_{13}N$; mol wt 135.21. C 79.95%, H 9.69%, N 10.36%. Prepn by resolution of amphetamine: Temmler, **GB 508757** (1939); Nabenhauer, **US 2276508** (1942 to SK&F); Magidson, Garkusha, *J. Gen. Chem. USSR* **11,** 339 (1941); from D-phenylalanine: D. B. Repke *et al., J. Pharm. Sci.* **67,** 1167 (1978). Toxicity data: E. J. Warawa *et al., J. Med. Chem.* **18,** 71 (1975). GC-MS determn in urine: V. A Tetlow, J. Merrill, *Ann. Clin. Biochem.* **33,** 50 (1996). Review of pharmacology: S. J. Chee, *Neurosci. Biobehav. Rev.* **16,** 481-496 (1992).



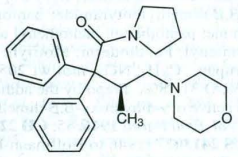
Sulfate. [51-63-8] Dexamin; Dexedrine; Dextrostat. White, odorless, crystalline powder with bitter taste. mp >300°. $[\alpha]_D^{20}$ +21.8° (c = 2). Freely sol in water (about 1:10); slightly sol in alcohol (about 1:800). Insol in ether. pH 5% aq soln: 5.0 to 6.0. LD_{50} orally in mice: 10 mg/kg (Warawa).

Tannate. [1407-85-8] Tanphetamin; Synatan. Prepn: Cavallito, **US 2950309** (1960 to Irwin, Neisler and Co.).

Note: This is a controlled substance (stimulant): **21 CFR,** 1308.12.

THERAP CAT: CNS stimulant; anorexic.

2955. Dextromoramide. [357-56-2] 1-[(3*S*)-3-Methyl-4-(4-morpholinyl)-1-oxo-2,2-diphenylbutyl]pyrrolidine; (+)-1-(3-methyl-4-morpholino-2,2-diphenylbutyryl)pyrrolidine; 4-[2-methyl-4-oxo-3,3-diphenyl-4-(1-pyrrolidinyl)butyl]morpholine; *d*-2,2-diphenyl-3-methyl-4-morpholinobutyrylpyrrolidine; pyrrolamidol; R-875; SKF-5137; *d*-Moramid(e); Palfium; Palphium; Jetrium; Dimorlin. $C_{25}H_{32}N_2O_2$; mol wt 392.53. C 76.50%, H 8.22%, N 7.14%, O 8.15%. Synthesis: Janssen, *J. Am. Chem. Soc.* **78,** 3862 (1956); **GB 822055** (1959 to Janssen).



Crystals, mp 180-184°. $[\alpha]_D^{20}$ +25.5° (c = 5 in benzene). uv max (0.01*N* isopropanol-HCl): 254, 260, 264 nm. Practically insol in water. Soly in 0.1*N* HCl: 1:25 (w/v). Soly (g/100 ml) in ethanol 50; in methanol 40; in acetone 50; in ethyl acetate 40; in benzene 5; in chloroform 5. Sol in ether.

Bitartrate. $C_{25}H_{32}N_2O_2.C_4H_6O_6$. Minute crystals, bitter taste. Dec 189-192°. Soly (w/v) at 25°: Water 20%, chloroform 30%, methanol 40%, ethanol 100%, acetone 100%.

Note: This is a controlled substance (opiate): **21 CFR,** 1308.11.

THERAP CAT: Analgesic (narcotic).

2956. Dezocine. [53648-55-8] (5*R*,11*S*,13*S*)-13-Amino-5,6,7,8,9,10,11,12-octahydro-5-methyl-5,11-methanobenzocyclo-