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ProductInformation

Dobutamine hydrochloride

Product Number **D 0676**
Storage Temperature 2-8 °C

Product Description

Molecular Formula: $C_{18}H_{23}NO_3 \bullet HCl$
Molecular Weight: 337.8
CAS Number: 49745-95-1
Melting Point: 188-189 °C
$Pk_a = 9.45$[1]
Extinction coefficient: $E^{mM} = 4.77$ (280 nm, methanol)[1]
Synonym: Dobutrex

Dobutamine hydrochloride, a dopamine derivative, is a selective β_1-adrenergic agonist.[1] It is a sympathomimetic agent with inotropic action (changes strength of muscle contraction) on the heart. However, it may have some α and β_2-agonist properties as well.[2]

Dobutamine induced relaxation in the rat mesenteric arteries and in the vascular smooth muscle of isolated rabbit aorta.[3,4] Dobutamine was shown to be at least 10-fold more potent than salbutamol, a β_2-adrenergic agonist, for induction of both DNA synthesis and plasma membrane desialylation in mouse parotid glands (intraperitoneal injection, 0.4-40 μg/gram body weight).[5] After intravenous administration, it is rapidly metabolized by conjugation with glucuronide and 3-O-methylation to inactive metabolites which are excreted in the urine, mostly in the first 2 hours. The half-life in plasma is about two minutes.[6]

The absorbance, IR and mass spectra have been reported.[6] An HPLC detection procedure for dobutamine in equine plasma (detection limit of 100 pg/ml) has also been reported.[7]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

Dobutamine hydrochloride is sparingly soluble in water (10 mg/ml, with gentle heating) and in ethanol (20 mg/ml, with gentle heating), forming a clear, faint yellow solution in each solvent. It is soluble in methanol and in pyridine.[6]

Storage/Stability

Solutions are rapidly oxidized at pH 11-13.[1] It is recommended that solutions be freshly prepared and protected from light. Dobutamine hydrochloride is sensitive to light.

References

1. The Merck Index, 13th Ed., Entry# 3429.
2. Martindale The Extra Pharmacopoeia, 30th ed., Reynolds, J. E. F., ed., The Pharmaceutical Press (London, England: 1993), p. 1242.
3. Huang, Y., et al., Role of endothelium and K^+ channels in dobutamine-induced relaxation in rat mesenteric artery. Clin. Exp. Pharmacol. Physiol., **25(6)**, 405-411 (1998).
4. Aikawa, J., et al., Vascular smooth muscle relaxation by alpha-adrenoceptor blocking action of dobutamine in isolated rabbit aorta. J. Cardiovasc. Pharmacol., **27(1)**, 33-36 (1996).
5. Gonzalez Burgos, M.J., et al., Plasma membrane desialylation and DNA synthesis are induced via adrenergic receptors of the β_1-subtype in mouse parotid glands. Biochim. Biophys. Acta, **1222**, 208-214 (1994).

6. Clarke's Isolation and Identification of Drugs, 2nd ed., Moffat, A.C., et al., eds., The Pharmaceutical Press (London, GB: 1986), p. 568-569.

7. Hardee, G.E., and Lai, J.W., Determination of dobutamide in plasma by liquid chromatography with electrochemical detection. Analyt. Lett. (Part B), **16**, 69-75 (1983).

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