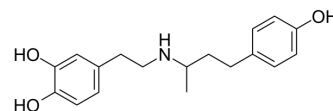


Dobutamine

Cat. No.:	HY-15746A
CAS No.:	34368-04-2
Molecular Formula:	C ₁₈ H ₂₃ NO ₃
Molecular Weight:	301.38
Target:	Adrenergic Receptor
Pathway:	GPCR/G Protein; Neuronal Signaling
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Dobutamine is a synthetic catecholamine that acts on α 1-AR, β 1-AR, β 2-AR (α -1, β -1 and β -2 adrenoceptors). Dobutamine is a selective β 1-AR agonist, relatively weak activity at α 1-AR and β 2-AR. Dobutamine can increase cardiac output and correct hypoperfusion ^{[1][2][3][4]} .								
In Vivo	<p>Dobutamine has a rapid onset of action and a short half-life^[2].</p> <p>Dobutamine (0.15-20 mg/kg; i.p.) results in subsequent increase in the left ventricular function and heart rate acceleration with an increasing dose in wildtype mice^[3].</p> <p>Dobutamine results in significant inotropic, lusitropic, and chronotropic cardiac response with a high dose in wildtype mice^[3].</p> <p>Low doses of Dobutamine significantly increases inotropic and lusitropic cardiac performance without chronotropic changes in the Tgαq*44 mice^[3].</p> <p>Dobutamine increases heart rate only after high doses, but then inotropic and lusitropic cardiac functional reserve is lost^[3].</p> <p>Dobutamine increases alveolar liquid clearance in ventilated rats by beta-2 receptor stimulation^[4].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <table border="1"> <tr> <td>Animal Model:</td> <td>Tgαq*44 mice (heart failure models)^[3]</td> </tr> <tr> <td>Dosage:</td> <td>0.15 mg/kg, 0.5 mg/kg as a low dose, 1.5 mg/kg, 5 mg/kg, 20 mg/kg as a high dose</td> </tr> <tr> <td>Administration:</td> <td>Intraperitoneal injection</td> </tr> <tr> <td>Result:</td> <td>Induced different response in cardiac function on a low and high dose in mice with heart failure.</td> </tr> </table>	Animal Model:	Tg α q*44 mice (heart failure models) ^[3]	Dosage:	0.15 mg/kg, 0.5 mg/kg as a low dose, 1.5 mg/kg, 5 mg/kg, 20 mg/kg as a high dose	Administration:	Intraperitoneal injection	Result:	Induced different response in cardiac function on a low and high dose in mice with heart failure.
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CUSTOMER VALIDATION

- Comput Struct Biotechnol J. 2023 Jul 7, 21, 3490-3502.
- Front Cell Dev Biol. 2022 Apr 20;10:889656.

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REFERENCES

- [1]. Tuttle RR, et al. Dobutamine: development of a new catecholamine to selectively increase cardiac contractility. *Circ Res.* 1975 Jan;36(1):185-96.
- [2]. Vallet B, et al. Dobutamine: mechanisms of action and use in acute cardiovascular pathology. *Ann Cardiol Angeiol (Paris).* 1991 Jun;40(6):397-402.
- [3]. Tyrankiewicz U, et al. Characterization of the cardiac response to a low and high dose of dobutamine in the mouse model of dilated cardiomyopathy by MRI in vivo. *J Magn Reson Imaging.* 2013 Mar;37(3):669-77.
- [4]. Tibayan FA, et al. Dobutamine increases alveolar liquid clearance in ventilated rats by beta-2 receptor stimulation. *Am J Respir Crit Care Med.* 1997 Aug;156(2 Pt 1):438-44.
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Caution: Product has not been fully validated for medical applications. For research use only.

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