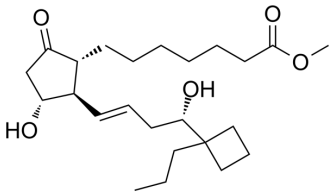
Butaprost

Cat. No.:	HY-100448A
CAS No.:	69685-22-9
Molecular Formula:	$C_{24}H_{40}O_5$
Molecular Weight:	408.57
Target:	Prostaglandin Receptor; TGF-beta/Smad
Pathway:	GPCR/G Protein; Stem Cell/Wnt; TGF-beta/Smad
Storage:	Solution, -20°C, 2 years



BIOLOGICAL ACTIVITY

Description

Butaprost is a selective prostaglandin E receptor (EP2) agonist with an EC_{50} of 33 nM and a K_i of 2.4 μM for murine EP2 receptor. Butaprost is less activity against murine EP1, EP3 and EP4 receptors. Butaprost attenuates fibrosis by hampering TGF-β/Smad2 signalling[1][2][3].

In Vitro

Butaprost (1-100 nM; 0.5-24 hours) induces about a five-fold upregulation of Nur77 mRNA expression in hEP2-HEK293/EBNA cells in a dose- and time-dependent. Butaprost upregulated Nur77 gene expression through the PKC pathway[1].

Butaprost (50 μM; 24 hours) reduces TGF-β-induced fibronectin (FN) expression, Smad2 phosphorylation and epithelial-mesenchymal transition in Madin-Darby Canine Kidney (MDCK) cells[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

Cell Line:	HEK 293/EBNA cells stably expressing the human EP2 receptor (hEP2-HEK 293/EBNA cells)
Concentration:	1 nM, 10 nM, 100 nM
Incubation Time:	0.5 hours, 1 hours, 6 hours, 24 hours
Result:	Induced about a five-fold upregulation of Nur77 mRNA expression in hEP2-HEK293/EBNA cells.

In Vivo

Butaprost (1-4 mg/kg; intraperitoneal injection; twice daily; for 7 days) treatment attenuates the development of fibrosis in mice that underwent unilateral ureteral obstruction surgery, as illustrated by a reduction in the gene and protein expression of α-smooth muscle actin, fibronectin and collagen 1A1[2].

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Animal Model:	Male C57BL/6 mice (8 weeks of age; 21 g) bearing unilateral ureteral obstruction surgery[2]
Dosage:	1 mg/kg, 2 mg/kg, 4 mg/kg
Administration:	Intraperitoneal injection; twice daily; for 7 days
Result:	Attenuated the development of fibrosis in mice that underwent unilateral ureteral obstruction surgery.

REFERENCES

[1]. Yanbin Liang, et al. Upregulation of orphan nuclear receptor Nur77 following PGF(2alpha), Bimatoprost, and Butaprost treatments. Essential role of a protein kinase C pathway involved in EP(2) receptor activated Nur77 gene transcription. Br J Pharmacol. 20

[2]. Michael Schou Jensen, et al. Activation of the prostaglandin E 2 EP 2 receptor attenuates renal fibrosis in unilateral ureteral obstructed mice and human kidney slices. Acta Physiol (Oxf). 2019 Sep;227(1):e13291.

[3]. K Tani, et al. Design and synthesis of a highly selective EP2-receptor agonist. Bioorg Med Chem Lett. 2001 Aug 6;11(15):2025-8.

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