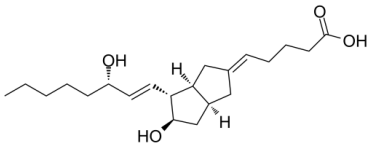
Data Sheet

Product Name:	Carbacyclin
Cat. No.:	CS-0045198
CAS No.:	69552-46-1
Molecular Formula:	C21H34O4
Molecular Weight:	350.49
Target:	Prostaglandin Receptor
Pathway:	GPCR/G Protein
Solubility:	10 mM in DMSO



BIOLOGICAL ACTIVITY:

Carbacyclin is a PGI2 analogue, acts as a **prostacyclin (PGI2) receptor** agonist and vasodilator, and potently inhibits platelet aggregation. IC50 & Target: PGI2 receptor[1] **In Vitro:** Carbacyclin is an agonist of prostacyclin (PGI2) receptor[1]. Carbacyclin acts as an inhibitor of platelet aggregation induced by ADP or collagen in vitro[2]. Carbacyclin is a PGI2 analogue, activates CPT-1 mRNA expression through PPARδ, independent of the IP receptor signaling pathway. Carbacyclin (0.02 μM to 20 μM) activates the IP receptor signaling pathway via PKA, and such an effect is inhibited by H-89, a PKA inhibitor. Carbacyclin (0.02-80 μM) increases PPRE promoter activity via PPARδ independent of the IP receptor signaling pathway in cardiomyocytes[3]. **In Vivo:** Carbacyclin is 0.03 times as active as prostacyclin on inhibiting platelet aggregation in human, dog or rabbit plasma[2]. Carbacyclin (100 μg, i.p.) induces CPT-1 mRNA expression in murine heart[3].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: [3]Primary cultures of **neonatal rat cardiomyocytes** are prepared from the ventricles of 1-day-old Wistar rats, and are seeded at a density of **4 × 10^5/6-well** plastic plates, 9 × 10^5/60 mm dishes, or 3 × 10^6/100 mm dishes with Dulbecco's modified Eagle's medium (DMEM) containing 10% fetal calf serum (FCS). After 40 h of incubation, cultured cardiomyocytes are serum-starved for 8 h before **Carbacyclin** stimulation.

Animal Administration: [3]Mice[3]

Ten to twelve week-old male **C57BL/6 mice** (20-25 g) are used in the experiment. Mice (n = 4) are injected **intraperitoneally with 100 μg of Carbacyclin**, and are sacrificed at the times indicated. The hearts are excised, and the ventricles are then homogenized with 3 mL of Isogen for the following total RNA extraction procedure[3].

References:

[1]. Takasuka M, et al. FTIR spectral study of intramolecular hydrogen bonding in thromboxane A2 receptor agonist (U-46619), prostaglandin (PG)E2, PGD2, PGF2 alpha, prostacyclin receptor agonist (carbacyclin), and their related compounds in dilute CCl4 solution: structure-activity relationships. J Med Chem. 1994 Jan 7;37(1):47-56.

[2]. Whittle BJ, et al. Carbacyclin--a potent stable prostacyclin analogue for the inhibition of platelet aggregation. Prostaglandins. 1980 Apr;19(4):605-27.

[3]. Kuroda T, et al. Carbacyclin induces carnitine palmitoyltransferase-1 in cardiomyocytes via peroxisome proliferator-activated receptor (PPAR) delta independent of the IP receptor signaling pathway. J Mol Cell Cardiol. 2007 Jul;43(1):54-62.

CAIndexNames:

Pentanoic acid, 5-[(3aS,4R,5R,6aS)-hexahydro-5-hydroxy-4-[(1E,3S)-3-hydroxy-1-octenyl]-2(1H)-pentalenylidene]-, (5E)-

SMILES:

O=C(O)CCC/C=C1C[C@@]2([H])C[C@@H](O)[C@H](/C=C/[C@@H](O)CCCCC)[C@@]2([H])C\1

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