

Asaraldehyde

Catalog No: tcsc6035



Available Sizes

Size: 100mg



Specifications

CAS No:

4460-86-0

Formula:

$C_{10}H_{12}O_4$

Pathway:

Immunology/Inflammation

Target:

COX

Purity / Grade:

>98%

Solubility:

H₂O :

Alternative Names:

Asaronaldehyde;Asaraldehyde;2,4,5-trimethoxy-Benzaldehyde

Observed Molecular Weight:

196.2

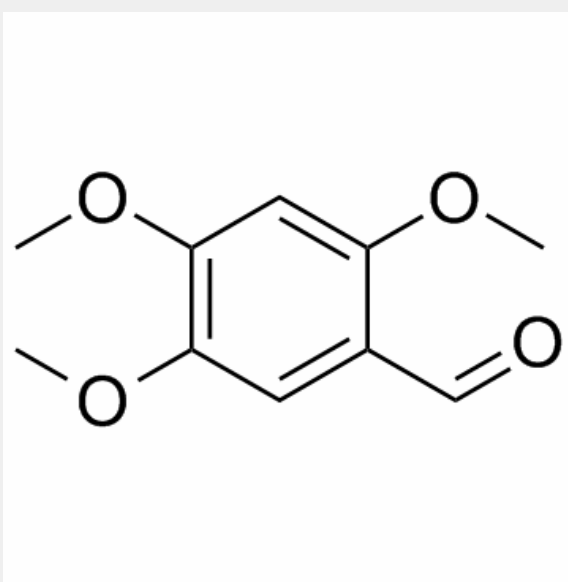
Product Description

Asarylaldehyde is a natural **COX-2** inhibitor, which isolated from carrot (*Daucus carota* L.) seeds significantly inhibits cyclooxygenase II (COX-2) activity at **IC₅₀** value 100 µg/mL.

IC₅₀ & Target: IC₅₀: 100 µg/mL (COX-2)^[1]

In Vitro:

Asarylaldehyde (2,4,5-TMBA) is a natural COX-2 inhibitor, which isolated from carrot (*Daucus carota* L.) seeds significantly inhibits cyclooxygenase II (COX-2) activity at the concentration of 100 µg/mL compared to three commercial nonsteroidal anti-inflammatory drugs Aspirin, Ibuprofen, and Naproxen at their IC₅₀ values 180, 2.52, and 2.06 µg/mL, respectively. 2,4,5-TMBA, a natural inhibitor of cyclooxygenase-2, suppresses adipogenesis and promotes lipolysis in 3T3-L1 adipocytes. 2,4,5-Trimethoxybenzaldehyde (2,4,5-TMBA) present in plant roots, seeds, and leaves is reported to be a significant inhibitor of cyclooxygenase-2 (COX-2) activity at the concentration of 100 µg/mL. Because COX-2 is associated with differentiation of preadipocytes, the murine 3T3-L1 cells are cultured with 100 µg/mL of 2,4,5-TMBA during differentiation and after the cells are fully differentiated to study the effect of 2,4,5-TMBA on adipogenesis and lipolysis. Oil Red O staining and triglyceride assay revealed that 2,4,5-TMBA inhibited the formation of lipid droplets during differentiation; moreover, 2,4,5-TMBA down-regulated the protein levels of adipogenic signaling molecules and transcription factors MAP kinase kinase (MEK), extracellular signal-regulated kinase (ERK), CCAAT/enhancer binding protein (C/EBP)α, β, and δ, peroxisome proliferator-activated receptor (PPAR)γ, adipocyte determination and differentiation-dependent factor 1 (ADD1), and the rate-limiting enzyme for lipid synthesis acetyl-CoA carboxylase (ACC). In fully differentiated adipocytes, treatment with 2,4,5-TMBA for 72 h significantly decreased lipid accumulation by increasing the hydrolysis of triglyceride through suppression of perilipin A (lipid droplet coating protein) and up-regulation of hormone-sensitive lipase (HSL). When treated with 100 µg/mL of 2,4,5-TMBA for 24, 48, or 72 h, the viability of fully differentiated 3T3-L1 adipocytes is decreased by 8.35, 15.54, and 27.26%, respectively. When the preadipocytes are treated with 100 µg/mL of 2,4,5-TMBA for 24 h before differentiation medium is supplemented, the cell viability is decreased by 26.46%^[1]. A COX-2 inhibitor 2,4,5-trimethoxybenzaldehyde (TMBA) is found to be the most abundant constituent, but is totally absent in its cultured broth and its natural host, *C. kanehirae* wood. 2,4,5-trimethoxybenzaldehyde (TMBA) is the major constituent in fruiting bodies^[2].



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