Description: Chitosan oligosaccharide, an oligomer of β-(1→4)-linked D-glucosamine, activates AMPK and inhibits inflammatory signaling pathways.

Storage: 2 years -80°C in solvent; 3 years -20°C powder;

<table>
<thead>
<tr>
<th>Solubility</th>
<th>H2O</th>
<th>50 mg/mL (Need ultrasonic)</th>
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<tr>
<td></td>
<td>DMSO</td>
<td>50 mg/mL (Need ultrasonic)</td>
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( < 1 mg/ml refers to the product slightly soluble or insoluble )

Receptor (IC50) | AMPK

In vitro Activity
Activation of AMPK and inhibition of inflammatory signaling pathways including NF-κB and MAPK pathways are recognized as major mechanisms responsible for several effects of Chitosan oligosaccharide (COS) including anti-inflammation, anti-cancer, and anti-diabetes. COS can interrupt cancer progression at multiple stages by modulating several signaling proteins/pathways including AMPK, NF-κB, mTOR, CD147, caspase-3, MMP-2, MMP-9, and VEGF. In vitro experiments have demonstrated that Chitosan oligosaccharide induced the death of several cancer cell types including ascites, bladder cancer, prostate cancer, lung cancer, liver cancer, leukemia, cervical cancer, and colorectal cancer. The values of IC50 of Chitosan oligosaccharide in inducing cytotoxicity are 25 μg/mL-50 μg/mL depending on types of cancer cells [1].

In vivo Activity
The oral administration of Chitosan oligosaccharide (16 mg/kg/day) suppresses the production of the proinflammatory cytokines involved in allergic reactions, i.e., IL-4, IL-13, and TNF-α in the lung tissues and bronchoalveolar lavage fluid of the mice. Last, an anti-inflammatory effect of Chitosan oligosaccharide on lymphocyte activation has been documented in a rat model of autoimmune anterior uveitis induced by immunization with bovine melanin-associated antigen [1]. Chitosan oligosaccharide inhibits UV-induced macroscopic appearance in mice skin. Compared with healthy dorsal skin with smoothness and some shallow wrinkles of hairless mice in the normal control group, UV exposure for 10 weeks triggers skin erythema, dry, thickening, sagging and coarse wrinkles, and even leathery appearance and slight flesh-colored lesion in the model mice, the visual score of which is markedly higher than that of the normal control group (p<0.05) [2].

Reference

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