

Product Data Sheet

Product Name: MSAB
Cat. No.: GC61093

Chemical Properties

Cas. No. 173436-66-3

SMILES O=C(C1=CC=CC(NS(=O)(C2=CC=C(C=C2)C)=O)=C1)OC

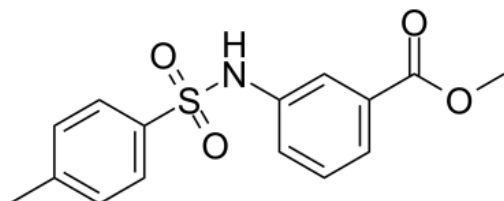
Formula $C_{15}H_{15}NO_4S$ M.Wt 305.35

Solubility DMSO: 250 mg/mL (818.73 mM) Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Cell lines Cal 27 and SCC154

Caution: Product has not been fully validated for medical applications. For research use only.

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Preparation Method A colony formation assay was used to determine the anticolonogenic potential of the MSAB. As SCC154 cells require cell-to-cell contact to proliferate, the observed results in the clonogenic assay were not reliable nor replicable. The Cal 27 cells were seeded in 12-well plates with a density of 250cells/well in 1ml. Twenty-four h after seeding, cells were treated with MSAB at final concentrations of 0.25, 0.5, and 1 μ M, or DMSO (all diluted in 1ml culture medium). The medium was aspirated 72h after treatment, and 1ml fresh culture medium was added. 9 days after seeding, colonies of sufficient size formed. To eliminate floating or dead cells, as well as cell debris, wells were washed with 1ml 1 $\times$ DPBS directly before the measurement. The TECAN multimode microplate reader was used to take pictures of the wells and a self-written macro for ImageJ 1.53e.3 was used to count the generated colonies.

Reaction Conditions 0.25, 0.5, and 1 μ M; 72h

Applications MSAB showed promising antineoplastic effects in-vitro and the underlining mechanism could potentially revolve around the inhibition of the epithelial-to-mesenchymal transition (EMT).

Animal experiment [2]:

Animal models male C57BL/6 mice

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Preparation Method	Ten-week-old male C57BL/6 mice, weights ranging from 25g to 30g were used in this study. These mice are housed in specific pathogen-free (SPF) animal care facilities at a temperature (22–25°C), 12-h/12-h day-night cycle, and animals are free to draw water and food in cages. Before the experiment, the mice were left undisturbed for one week to acclimate to the new environment. For the toxicity test of MSAB/HSA, mice were randomly divided into two groups (n=7 in each group) including Vehicle injection group and MSAB/HSA injection group. PBS was used in Vehicle injection group. After 4 weeks injection (twice a week, 1mg/mL, 20μL per intra-articular injection), mice behaviors were assessed by the Laboratory Animal Behavior Observation Registration and Analysis System and tissues including liver, kidney, heart, spleen, knee joint were harvested for histological analysis. For OA treatment study, mice were randomly allocated into three groups (n=10 in each group), including the Ctrl group (Sham operation, vehicle injection), destabilization of the medial meniscus (DMM) surgery with intra-articular injection of vehicle, DMM surgery with intra-articular injection of MSAB/HSA twice a week. Under general anesthesia in mice, DMM surgery was performed by sectioning the medial meniscotibial ligament anchoring medial meniscus to tibial plateau. The control group underwent Sham surgery in which a similar incision was made into the joint capsule and then closed.
Dosage form	twice a week; 1mg/mL; intra-articular injection
Applications	MSAB ameliorated OA progression and OA-associated pain through inhibition of β -catenin-DDR2 signaling.

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References:

- [1] Maier, Tobias et al. "Inhibition of beta-catenin shows therapeutic potential in head and neck squamous cell carcinoma in vitro." *European archives of oto-rhino-laryngology : official journal of the European Federation of Oto-Rhino-Laryngological Societies (EUFOS) : affiliated with the German Society for Oto-Rhino-Laryngology - Head and Neck Surgery* vol. 280,1 (2023): 399-408. doi:10.1007/s00405-022-07598-y
- [2] Lu, Ke et al. "MSAB limits osteoarthritis development and progression through inhibition of β -catenin-DDR2 signaling." *Bioactive materials* vol. 46 259-272. 24 Dec. 2024, doi:10.1016/j.bioactmat.2024.10.023

Background

MSAB (methyl 3-[(4-methylphenyl)sulfonyl]amino}benzoate) is a selective Wnt/ β -catenin signaling inhibitor binding to β -catenin and promoting its degradation with an EC₅₀ of 0.583 μ M^[1]. MSAB shows positive effects on cancer and osteoarthritis development^[2,3].

In vitro, MSAB (0.25, 0.5, and 1 μ M; 72h) in head and neck squamous cell carcinoma in Cal 27 (HPV-negative) and SCC154 (HPV-positive) cell lines shows therapeutic positive effects^[4]. MSAB (5 μ M; 72h) inhibits KynA-induced osteogenic differentiation in primary bone marrow mesenchymal stem cells from mice^[5].

In vivo, MSAB (twice a week; 1mg/mL; intra-articular injection) limits osteoarthritis development and progression through inhibition of β -catenin-DDR2 signaling pathway^[6]. MSAB (20mg/kg; abdominal cavity injection) attenuates the anti-inflammatory and antiapoptotic effects of SB216763 in VIL^[7]. MSAB (10mg/kg; i.p.; every 2 days) promoted colorectal cancer metastasis in APC^{min/+} and nude mice models^[8].

References:

- [1] Hwang, So-Young et al. "Direct Targeting of β -Catenin by a Small Molecule Stimulates Proteasomal Degradation and Suppresses Oncogenic Wnt/ β -Catenin Signaling." *Cell reports* vol. 16,1 (2016): 28-36. doi:10.1016/j.celrep.2016.05.071
- [2] Chen, Zongyu et al. "The Wnt/ β -catenin pathway regulates inflammation and apoptosis in

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ventilator-induced lung injury." *Bioscience reports* vol. 43,3 (2023): BSR20222429.

doi:10.1042/BSR20222429

[3] Cui, Can et al. "Is β -Catenin a Druggable Target for Cancer Therapy?." *Trends in biochemical sciences* vol. 43,8 (2018): 623-634. doi:10.1016/j.tibs.2018.06.003

[4] Maier, Tobias et al. "Inhibition of beta-catenin shows therapeutic potential in head and neck squamous cell carcinoma in vitro." *European archives of oto-rhino-laryngology : official journal of the European Federation of Oto-Rhino-Laryngological Societies (EUFOS) : affiliated with the German Society for Oto-Rhino-Laryngology - Head and Neck Surgery* vol. 280,1 (2023): 399-408.

doi:10.1007/s00405-022-07598-y

[5] Ma, Jiangwei et al. "Kynurenic acid promotes osteogenesis via the Wnt/ β -catenin signaling." *In vitro cellular & developmental biology. Animal* vol. 59,5 (2023): 356-365. doi:10.1007/s11626-023-00774-2

[6] Lu, Ke et al. "MSAB limits osteoarthritis development and progression through inhibition of β -catenin-DDR2 signaling." *Bioactive materials* vol. 46 259-272. 24 Dec. 2024, doi:10.1016/j.bioactmat.2024.10.023

[7] Zhang, Yi-De et al. "SB-216763, a GSK-3 β inhibitor, protects against aldosterone-induced cardiac, and renal injury by activating autophagy." *Journal of cellular biochemistry* vol. 119,7 (2018): 5934-5943. doi:10.1002/jcb.26788

[8] Li, Xue et al. "Colorectal cancer cells secreting DKK4 transform fibroblasts to promote tumour metastasis." *Oncogene* vol. 43,20 (2024): 1506-1521. doi:10.1038/s41388-024-03008-1

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