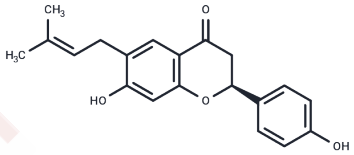
Data Sheet (Cat.No.T3846)

TargetMol

Bavachin

Chemical Properties



CAS No. : 19879-32-4

Formula: C20H20O4

Molecular Weight: 324.37

Storage: Keep away from direct sunlight,Keep away from moisture
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Bavachin (Corylifolin) is a phytoestrogen that activates the estrogen receptors ERα and ERβ.
Targets(IC50)	Estrogen Receptor/ERR,Estrogen/progestogen Receptor
In vitro	Bavachin effectively reduces melanin production and tyrosinase (TYR) activity. At a concentration of 10 μM, it inhibits not only TYR and c-Jun N-terminal kinase (JNK) protein expression but also the expression of TYR, tyrosinase-related protein-1 (TRP-1), TRP-2, extracellular signal-regulated kinase 1 (ERK1), ERK2, and JNK2 mRNA in A375 cells. The effects of bavachin on protein and mRNA expression levels of TYR, TRP-1, TRP-2, ERK1, ERK2, and JNK2 are significantly reversed by ICI182780 and U0126. Furthermore, bavachin promotes lipid accumulation in a dose-dependent manner, evident in Oil Red O (ORO) staining experiments, and enhances preadipocyte growth at 10 μM, as demonstrated in MTT assay, compared to control cells. It also boosts bromodeoxyuridine (BrdU) incorporation into newly synthesized DNA during pre-adipocyte proliferation, a process further enhanced by insulin and by co-treatment with insulin and bavachin. Bavachin activates adipogenic factors, increases peroxisome proliferator-activated receptor gamma (PPARγ) transcriptional activity in differentiated adipocytes, and improves insulin-stimulated glucose uptake through glucose transporter type 4 (GLUT4) translocation via the Akt and AMP-activated protein kinase (AMPK) pathways. Additionally, bavachin significantly increases human monoamine oxidase-A (hMAO-A) and hMAO-B activities. It also exhibits estrogen receptor (ER) ligand-binding activity, displacing [3H] estradiol (E2) from recombinant ER, with its estrogenic activity characterized by half-maximal effective concentrations (EC50) of 320 nM for ERα and 680 nM for ERβ in a transient transfection system. Bavachin upregulates mRNA levels of estrogen-responsive genes such as pS2 and PR, while decreasing ERα protein level via the proteasomal pathway.
Kinase Assay	The chemiluminescent assay is used to confirm PCSEE MAO-A and MAO-B inhibitory effects and to test BNN and BVN hMAO-A and hMAO-B inhibition using MAO-Glo kit. Each enzyme's Arbitrary Light Unit (ALU) is measured in the presence of PCSEE, BNN, BVN, and standard DEP as an MAO-BI positive control. Briefly, hMAO-A and hMAO-B isozymes are diluted to 2× with reaction buffer (pH 7.4) and preincubated with 4× PCSEE, BNN, BVN, or DEP working solutions at RT for 30?min in white opaque 96-well plates. For

Kinase Assay	activity inhibition, final 8.5?μg/mL concentrations of PCSEE, BNN, BVN, and DEP are used. For IC50 determination, 8× PCSEE and BNN working solutions are serially diluted using reaction buffers (pH 7.4) to make a 4× concentration. Ten points' range of PCSEE (1.0 to 250.0?μg/mL) and BNN (up to 400?μM (135.4?μg/mL)) final concentrations is used. Controls used are with and without ethanol. Ethanol solvent in controls is kept to a maximum final (volume) of ≤2%. Each isozyme is substituted with the reaction buffer for the blank. Based on our preliminary optimizations and Valley's method, the reaction is initiated by adding 4× luciferin derivative substrate (LDS) for a final (concentration) of 40 and 4?μM for hMAO-A and hMAO-B reactions, respectively. The final volume per well of each reaction is 50?μL. The reaction is optimized for the amount of A and B enzyme used to be incubated for less than 3.5?h at RT. To stop the reaction and produce the luminescence signal RLDR is added to all wells, 50?μL to each well, and incubated for a further 30?min.
Cell Research	Bavachin is dissolved in DMSO. MTT solution (20 μL) is added to each well of the 96-well plates, the cells are cultured for 4 h, the solution is discarded, and the purple crystal is dissolved in the wells with 150 μL DMSO solution, agitated in a 37°C incubator shaker for 10 min, and the optical density (OD) is measured at 490 nm by the microplate reader.

Solubility Information

Solubility	DMSO: 135 mg/mL (416.19 mM),Sonication is recommended. Chloroform, Dichloromethane, Ethyl Acetate: Soluble, (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 10 mg/mL (30.83 mM),Solution. 10% DMSO+90% Saline: < 10 mg/mL (30.83 mM),Lower concentrations may be soluble, but exact solubility limit is unknown. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.0829 mL	15.4145 mL	30.829 mL
5 mM	0.6166 mL	3.0829 mL	6.1658 mL
10 mM	0.3083 mL	1.5414 mL	3.0829 mL
50 mM	0.0617 mL	0.3083 mL	0.6166 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Wang JH, et al. Effects of bavachin and its regulation of melanin synthesis in A375 cells. Biomed Rep. 2016 Jul;5(1): 87-92. Epub 2016 May 20.
Luo Y, Gao X, Zou L, et al. Bavachin Induces Ferroptosis through the STAT3/P53/SLC7A11 Axis in Osteosarcoma Cells. Oxidative Medicine and Cellular Longevity. 2021
Lee H, et al. Bavachin from Psoralea corylifolia Improves Insulin-Dependent Glucose Uptake through Insulin Signaling and AMPK Activation in 3T3-L1 Adipocytes. Int J Mol Sci. 2016 Apr 8;17(4):527.
Zarmouh NO, et al. Evaluation of the Inhibitory Effects of Bavachinin and Bavachin on Human Monoamine Oxidases A and B. Evid Based Complement Alternat Med. 2015;22015:852194.
Park J, et al. Activation of Estrogen Receptor by Bavachin from Psoralea corylifolia. Biomol Ther (Seoul). 2012 Mar; 20(2):183-8.