

Product Data Sheet

Product Name: Equol
Cat. No.: GC16292

Chemical Properties

Cas. No. 94105-90-5

Chemical Name (3S)-3-(4-hydroxyphenyl)-3,4-dihydro-2H-chromen-7-ol

SMILES C1C(COC2=C1C=CC(=C2)O)C3=CC=C(C=C3)O

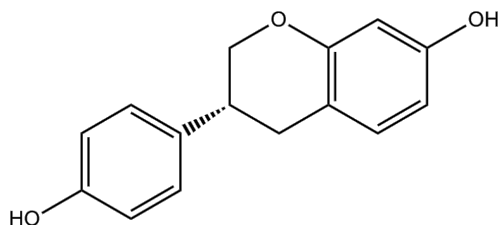
Formula $C_{15}H_{14}O_3$ M.Wt 242.27

Solubility $\geq 12.1\text{mg/mL}$ in DMSO 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: Primary rat osteoblasts are treated with 0.01-1 μM equol, 0.01-1 μM E2, or 0.01-1 μM equol/E2 combined with 1 μM ICI182780 for 24 or 48 hours. Then 10 mL 5 mg/mL MTT solution is added to each well. The plates are incubated at 37°C for 4 h, and then the supernatant is discarded and 100 mL DMSO is added to each well and mixed thoroughly before taking measurements in a microplate reader[3].

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

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**Animal
experiment:**

Rats: Equol or furosemide is administered orally at doses of 16, 40, and 100 mg/kg (in a volume of 16 mL/kg 5% arabic syrup) to groups of 3-9 rats (rats of a control group are administered vehicle only). Urine samples are collected for 6 h. Urinary sodium and potassium contents are measured by flame photometry[3].

Mouse: Equol is dissolved in water and administered orally to rats at a dose of 5 and 25 mg/kg BW for 8 weeks after a single dose of DMBA (100 mg/kg). As controls, rats are divided into vehicle alone and DMBA alone groups. In the second part, ICR mice are orally administered equol daily at a dose of 5 and 25 mg/kg BW for 7 weeks before a single dose of DMBA (34 mg/kg/week). After equol administration animals are followed for 1 week continuously. The control groups are the same as above and each group are comprised of six mice. Mice livers and mammary gland tumors are isolated, blotted, weighed, frozen in liquid nitrogen and stored at -70°C until assayed[5].

References:

- [1]. Axelson M, et al. The identification of the weak oestrogen equol [7-hydroxy-3-(4'-hydroxyphenyl)chroman] in human urine. *Biochem J.* 1982 Feb 1;201(2):353-7.
- [2]. Setchell KD, et al. S-equol, a potent ligand for estrogen receptor beta, is the exclusive enantiomeric form of the soy isoflavone metabolite produced by human intestinal bacterial flora. *Am J Clin Nutr.* 2005 May;81(5):1072-9. human intestinal bacterial flora.
- [3]. Wang J, et al. Equol promotes rat osteoblast proliferation and differentiation through activating estrogen receptor. *Genet Mol Res.* 2014 Jul 4;13(3):5055-63.
- [4]. Gimenez I, et al. Renal and vascular actions of equol in the rat. *J Hypertens.* 1997 Nov;15(11):1303-8.
- [5]. Choi EJ, et al. Anticancer mechanism of equol in 7,12-dimethylbenz(a)anthracene-treated animals. *Int J Oncol.* 2011 Sep;39(3):747-54.

Background

IC50: Not available.

Equol is an isoflavan produced by intestinal bacteria in response to soy isoflavone intake in human. It shows a wide range of activities including antioxidant activity, anti-inflammation activity and

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anticancer activity. It is reported that Equol specifically binds to 5 α -DHT and has a modest affinity for recombinant estrogen receptor ER β , which may be responsible for most of Equol's biological properties. [1]

In vitro: In vitro studies were conducted to measure both the binding affinity of Equol for 5 α -dihydrotestosterone (5 α -DHT) and the effects of Equol treatment in human prostate cancer (LNCap) cells. It was found that Equol bound to 5 α -DHT with maximum and half maximum concentrations of 100 nM and 4.8 nM, respectively. In addition, Equol significantly offset the increases in PSA levels from LNCap cells. [1]

In vivo: An in vivo study was performed to investigate effects of equol on rat prostate weight and circulating levels of sex steroid hormones. 1.0 mg/kg of Equol was injected to Long-Evans rats fed with a low isoflavone diet for 25 days. Findings from this study suggested that Equol significantly decreased rat prostate weights and down-regulated serum levels of 5 α -DHT. However, this agent did not alter levels of LH, testosterone and estradiol. [1]

Clinical trials: A clinical study on hypercholesterolemic patients demonstrated that, after 4 weeks' dietary intervention with a soy isoflavone-containing food, brachial artery-mediated vasodilatation in equol-producers was notably higher when compared with that in equol-nonproducers. Similar differential effects between equol-producers and nonproducers were also reported in arterial stiffness from a study on postmenopausal women taking tibolone. [2]

References:

[1]Lund TD, Blake C, Bu L, Hamaker AN, Lephart ED. iEquol an isoflavonoid: potential for improved prostate health, in vitro and in vivo evidence. *Reprod Biol Endocrin*. 2011; 9(4): doi: 10.1186/1477-7827-9-4.

[2]Setchell DR and Clerici C. Equol: Pharmacokinetics and biological actions. *J Nutr*. 2010 Jul; 140(7): 1363S–8S.

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