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产品名称：(±)-Equol
产品别名：(+)-雌马酚

生物活性：

Description	(±)-Equol is the racemate of equol. Equol is a metabolite of the soy isoflavones, daidzin and daidzein.
In Vitro	Equol is first isolated and identified from pregnant-mares' urine and later found in the urine of the goat, cow, hen and sheep[1]. Equol, unlike the soy isoflavones daidzein or genistein, has a chiral center and therefore can occur as 2 distinct diastereoisomers. S-equol is the exclusive product of human intestinal bacterial synthesis from soy isoflavones and both enantiomers are bioavailable. S-equol has a high affinity for estrogen receptor beta (Ki=0.73 nM), whereas R-equol is relatively inactive[2]. Equol could promote the proliferation and differentiation of rat osteoblasts through activating the ER-PKCα-related signaling pathway. The alkaline phosphatase activity also increases significantly in all of the equol and 17β-estradiol (E2) groups. Equol also significantly elevates the osteocalcin levels[3].
In Vivo	Equol is a modest natriuretic and vasorelaxant agent in the rat. Orally administered equol is about 8-fold less potent than orally administered furosemide. In isolated aortic rings precontracted by administration of phenylephrine, administration of equol relaxes the contracted aorta (concentration for half-maximal activity 58.9±16 μM)[4]. Equol possesses anticancer activity that suppresses tumor formation via apoptosis induction in rats with DMBA-induced mammary gland tumors. In addition, equol shows a hepatic protective effect by acting as an antioxidant and by reducing apoptosis[5].
Solvent&Solubility	***In Vitro:*** **DMSO : ≥ 100 mg/mL (412.76 mM)** * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent / Mass / Concentration	**1 mg**	**5 mg**	**10 mg**
	1 mM	4.1276 mL	20.6381 mL	41.2763 mL
	5 mM	0.8255 mL	4.1276 mL	8.2553 mL
	10 mM	0.4128 mL	2.0638 mL	4.1276 mL

*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液；一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。

储备液的保存方式和期限：-80°C, 6 months; -20°C, 1 month。-80°C 储存时，请在 6 个月内使用，-20°C 储存时，请在 1 个月内使用。

In Vivo:

请根据您的实验动物和给药方式选择适当的溶解方案。以下溶解方案都请先按照 In Vitro 方式配制澄清的储备液，再依次添加助溶剂：

——为保证实验结果的可靠性，澄清的储备液可以根据储存条件，适当保存；体内实验的工作液，建议您现用现配，当天使用； 以下溶剂前显示的百分比是指该溶剂在您配制终溶液中的体积占比；如在配制过程中出现沉淀、析出现象，可以通过加热和/或超声的方式助溶

1.请依序添加每种溶剂： 10% DMSO→40% PEG300 →5% Tween-80 → 45% saline

Solubility: ≥ 2.5 mg/mL (10.32 mM); Clear solution

此方案可获得 ≥ 2.5 mg/mL (10.32 mM，饱和度未知) 的澄清溶液。

以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 400 μL PEG300 中，混合均匀；

	向上述体系中加入 50 μL Tween-80，混合均匀；然后继续加入 450 μL 生理盐水定容至 1 mL。 2.请依序添加每种溶剂： 10% DMSO→ 90% (20% SBE-β-CD in saline) Solubility: 2.5 mg/mL (10.32 mM); Clear solution 此方案可获得 ≥ 2.5 mg/mL (10.32 mM，饱和度未知) 的澄清溶液。 以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 20% 的 SBE-β-CD 生理盐水水溶液中，混合均匀。 3.请依序添加每种溶剂： 10% DMSO →90% corn oil Solubility: ≥ 2.5 mg/mL (10.32 mM); Clear solution 此方案可获得 ≥ 2.5 mg/mL (10.32 mM，饱和度未知) 的澄清溶液，此方案不适用于实验周期在半个月以上的实验。 以 1 mL 工作液为例，取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 玉米油中，混合均匀。
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.

实验参考：

Cell Assay	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].
Animal Administration	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.