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产品名称：（S）-雌马酚
产品别名：(-)-(S)-Equol

生物活性：

Description	(-)-(S)-Equol is a high affinity ligand for estrogen receptor β with a K_i of 0.73 nM.
IC_{50} & Target	Human Endogenous Metabolite
In Vitro	(-)-(S)-Equol shows the greatest affinity for ERβ (Ki=0.73±0.2 nM), whereas its affinity for ERα (Ki=6.41±1 nM) is relatively poor[1]. (-)-(S)-Equol inhibits the growth of LnCaP, DU145 and PC3 human prostate cancer cell lines. (-)-(S)-Equol causes cell cycle arrest in the G2/M phase in PC3 cells by down regulating cyclin B1 and CDK1 and upregulating CDK inhibitors (p21 and p27), as well as inducing apoptosis by upregulating Fas ligand (FasL) and the expression of pro-apoptotic Bim. (-)-(S)-Equol increases the expression of FOXO3a, decreases the expression of p-FOXO3a and enhances the nuclear stability of FOXO3a. (-)-(S)-Equol also decreases the expression of MDM2, which serves as an E3 ubiquitin ligase forp-FOXO3a, thus preventing p-FOXO3a degradation by the proteasome[2]. (-)-(S)-Equol enantioselectively increases the survival of INS-1 cells presumably through activating PKA signaling. (-)-(S)-Equol might have applications as an anti-type 2 diabetic agent. In INS-1 pancreatic β-cells, (-)-(S)-Equol induces phosphorylation of cAMP-response element-binding protein at Ser 133, and induced cAMP-response element-mediated transcription[3].
In Vivo	(-)-(S)-Equol inhibits the tumor growth by 43.2% and 28.4% compared to the control on day 33, suggesting that the compound is not overtly toxic[2].

Solvent&Solubility

In Vitro:

DMSO： 100 mg/mL (412.76 mM; Need ultrasonic and warming)

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; Need ultrasonic

此方案可获得 2.5 mg/mL (10.32 mM)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]. 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. [2]. Lu Z, et al. S-equol, a Secondary Metabolite of Natural Anticancer Isoflavone Daidzein, Inhibits Prostate Cancer Growth In Vitro and In Vivo, Though Activating the Akt/FOXO3a Pathway. Curr Cancer Drug Targets. 2016;16(5):455-65. [3]. Horiuchi H, et al. S-equol nantioselectively activates cAMP-protein kinase A signaling and reduces alloxan-induced cell death in INS-1 pancreatic β-cells. J Nutr Sci Vitaminol (Tokyo). 2014;60(4):291-6.

实验参考：

Cell Assay	PC3 cells are seeded in 96-well culture plates (about 5×10^3 cells/ well) and cultured overnight at 37°C. Next, the cells are incubated with medium containing the indicated concentrations of (-)-(S)-Equol and/or DMSO for 72hr at 37°C. The cell viability is determined by the MTT assay[2].
Animal Administration	Mice: Mice are randomly divided into three groups of six mice each, and are treated by intragastric administration. The experimental groups are treated with 10 mg/kg or 20 mg/kg bodyweight of (-)-(S)-Equol (mice are treated everyday for 33 days). The control group is treated with an identical volume of 0.01ml sesame seed oil and 0.09 mL normal saline. The tumor size is examined every three days[2].
References	[1]. 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. [2]. Lu Z, et al. S-equol, a Secondary Metabolite of Natural Anticancer Isoflavone Daidzein, Inhibits Prostate Cancer Growth In Vitro and In Vivo, Though Activating the Akt/FOXO3a Pathway. Curr Cancer Drug Targets. 2016;16(5):455-65. [3]. Horiuchi H, et al. S-equol nantioselectively activates cAMP-protein kinase A signaling and reduces alloxan-induced cell death in INS-1 pancreatic β-cells. J Nutr Sci Vitaminol (Tokyo). 2014;60(4):291-6.