Product Data Sheet

Product Name: γ-Oryzanol
Cat. No.: GC31365

Chemical Properties

Cas. No.	11042-64-1		
SMILES	C[C@@H]([C@@]1([H])CC[C@]2(C)[C@]1(C)CCC34C2CCC5[C@@]3(CC[C@H](OC(/C=C/C6=CC(OC)=C(O)C=C6)=O)C5(C)C)C4)CC/C=C(C)\C		
Formula	$C_{40}H_{58}O_4$	M.Wt	602.89
Solubility	DMSO : 62.5 mg/mL (103.67 mM);Water : < 0.1 mg/mL (insoluble)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ 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	γ-Oryzanol		

Protocol

Kinase experiment:

To assess the inhibitory activity of each compound on DNA methylation, the formation of S-adenosyl-l-homocysteine (SAH) is measured in the presence of each compound (20 μM for screening assays),S-adenosyl methionine (SAM; 10 μM) and DNMT substrate (4 ng/μL) at 37°C for 90 min. To evaluate the Michaelis-Menten kinetics, DNMT1 (20 μM) is incubated with γ-Oryzanol, SAM (5 μM) and the indicated concentration of poly dI-dC at 37°C for 90 min. DNMT3a (100 μM) and DNMT3b (100 μM) are incubated with γ-Oryzanol, SAM (5 μM) and the indicated concentration of poly dG•dC at 37°C for 120 min. The assays are performed in quadruplicate. Extracted protein (0.75 mg/mL) is incubated with SAM (5 μM), poly dI-dC (5 μg/mL), and poly dG•dC (5 μg/mL) at 40°C for 120 min, and SAH formation is measured[1].

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Animal experiment:	Mice[1] Seven-week-old male C57BL/6J mice are used. To evaluate the preference for the HFD, γ-Oryzanol is administrated to 8-week-old mice by gavage during the food choice test. For the other experiments, an HFD containing 0.4% γ-Oryzanol is manufactured as pellets. After 12 weeks of feeding, tissue is collected from the striatum and hypothalamus. The daily intake of γ-Oryzanol, estimated from the mean food intake of the mice, is approximately 320 μg/g body weight. The doses of γ-Oryzanol are determined.

References:

[1]. Kozuka C, et al. Impact of brown rice-specific γ-oryzanol on epigenetic modulation of dopamine D2 receptors in brain striatum in high-fat-diet-induced obesity in mice. Diabetologia. 2017 Aug;60(8):1502-1511.

Background

Gamma-oryzanol (GO), a nutriactive phytochemical naturally occurring in crude rice bran oil, is an antioxidant compound used to treat hyperlipidemia, disorders of menopause and to increase the muscle mass. γ-Oryzanol is a potent DNA methyltransferases (DNMTs) inhibitor in the striatum of mice. γ-Oryzanol significantly inhibits the activities

of DNMT1 (IC50=3.2 μM), DNMT3a (IC50=22.3 μM).

From the proliferation assay using MTT reagent, the effect of gamma-oryzanol on DU145 and PC3 are slightly different with an IC50 after 7 days of exposure at 0.52±0.06 and 0.40±0.08 mg/ml, respectively. For in vitro condition in proliferation assay, IC50 values seem to be high in the scale of mg/ml. gamma-oryzanol may affect to prostate cancer cells through the down regulation of some antioxidant genes, CAT and GPX[1].

In tumor-bearing mice, gamma-oryzanol can reduce tumor mass associated with pro-angiogenic biomarkers[1]. Gamma-oryzanol is not carcinogenic and are safe for animals. In vivo trials proved gamma-oryzanol to be powerful antioxidant and also appears to be a very promising anticancerogenic compound. Supplementation of gamma-oryzanol in diabetic patients may improve metabolic dysfunctions such as hyperglycaemia, hypercholesterolaemia, hypertriglyceridaemia, insulin resistance and may alleviate diabetic complications resulting from lipid peroxidation and free radicals[3].

[1] Klongpityapong P, et al. Asian Pac J Cancer Prev. 2013, 14(9):5421-5. [2] Chotimarkorn C, et al. Phytomedicine. 2008, 15(11):951-8. [3] Szcze?niak KA, et al. J Anim Physiol Anim Nutr (Berl). 2016, 100(4):601-17.

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