

## γ-Oryzanol

|           |                       |       |         |
|-----------|-----------------------|-------|---------|
| Cat. No.: | HY-B2194              |       |         |
| CAS No.:  | 11042-64-1            |       |         |
| Target:   | DNA Methyltransferase |       |         |
| Pathway:  | Epigenetics           |       |         |
| Storage:  | Powder                | -20°C | 3 years |
|           |                       | 4°C   | 2 years |
|           | In solvent            | -80°C | 2 years |
|           |                       | -20°C | 1 year  |

# γ-Oryzanol

### SOLVENT & SOLUBILITY

|                 |  |
|-----------------|--|
| <b>In Vitro</b> | DMSO : 12.5 mg/mL (Need ultrasonic)  |
| <b>In Vivo</b>  | <ol style="list-style-type: none"> <li>Add each solvent one by one: 10% PEG400 &gt;&gt; 10% Tween80 &gt;&gt; 80% saline<br/>Solubility: 10 mg/mL (Infinity mM); Suspended solution; Need ultrasonic</li> <li>Add each solvent one by one: 50% PEG300 &gt;&gt; 50% saline<br/>Solubility: 2.5 mg/mL (Infinity mM); Suspended solution; Need ultrasonic</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 40% PEG300 &gt;&gt; 5% Tween-80 &gt;&gt; 45% saline<br/>Solubility: ≥ 2.08 mg/mL (Infinity mM); Clear solution</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 90% (20% SBE-β-CD in saline)<br/>Solubility: 2.08 mg/mL (Infinity mM); Suspended solution; Need ultrasonic and warming</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 90% corn oil<br/>Solubility: ≥ 2.08 mg/mL (Infinity mM); Clear solution</li> </ol> |

### BIOLOGICAL ACTIVITY

|                                     |   |                                       |
|-------------------------------------|---|---------------------------------------|
| <b>Description</b>                  | γ-Oryzanol is a potent DNA methyltransferases (DNMTs) inhibitor in the striatum of mice. γ-Oryzanol significantly inhibits the activities of DNMT1 (IC <sub>50</sub> =3.2 μM), DNMT3a (IC <sub>50</sub> =22.3 μM).  |                                       |
| <b>IC<sub>50</sub> &amp; Target</b> | DNMT1<br>3.2 μM (IC <sub>50</sub> )   | DNMT3A<br>22.3 μM (IC <sub>50</sub> ) |
| <b>In Vitro</b>                     | γ-Oryzanol significantly inhibits the activities of DNMT1 (IC <sub>50</sub> =3.2 μM), DNMT 3a (IC <sub>50</sub> =22.3 μM) and DNMT 3b (maximum inhibition 57%). In contrast, the inhibitory activity of Ferulic acid, a metabolite of γ-Oryzanol, is much lower than that of γ-Oryzanol. Furthermore, γ-Oryzanol acts as a partial antagonist against ERRγ, which primarily serves as a positive regulator for DNMT1 production, and consequently decreased the activity of DNMT1 <sup>[1]</sup> .<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |                                       |
| <b>In Vivo</b>                      | The brown rice-specific bioactive component γ-Oryzanol, a mixture of ferulic acid ester and several phytosterols, attenuates the preference for dietary fat via a decrease in hypothalamic endoplasmic reticulum (ER) stress. γ-Oryzanol ameliorates HFD-induced DNA hypermethylation of the promoter region of D2R in the striatum of mice. γ-Oryzanol might regulate levels   |                                       |

of DNMTs in a striatum-specific manner.  $\gamma$ -Oryzanol partially decreases ERR $\gamma$  activity (an approximately 40% reduction of the innate value). Oral administration of  $\gamma$ -Oryzanol to male mice by gavage significantly attenuates the preference for an HFD (93% of the values for vehicle-treated mice), resulting in an apparent attenuation of body weight gain<sup>[1]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## PROTOCOL

### Animal Administration <sup>[1]</sup>

#### Mice<sup>[1]</sup>

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

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- Adv Funct Mater. 2021 Mar 6.
- Nat Commun. 2023 Jun 10;14(1):3445.
- Adv Sci (Weinh). 2021 Oct 31;e2100808.
- Phytomedicine. 20 July 2022, 154176.
- Int Immunopharmacol. 2024 Jan 10;128:111469.

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## REFERENCES

[1]. Kozuka C, et al. Impact of brown rice-specific  $\gamma$ -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.

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

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