



國立臺灣大學食品科技研究所  
Institute of Food Science and  
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# 食科所專題演講



演講者：

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講題：**Multifunctional antioxidant  
phytochemical,  $\gamma$ -oryzanol  
extracted from rice bran**

時間：十月二十六日(星期三)  
13:20-15:10

地點：食科所四樓404 講堂  
歡迎踴躍出席參加

# Multifunctional antioxidant phytochemical, $\gamma$ -oryzanol extracted from rice bran

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Rice is one of the world's most important food crops and more than half of the people in the world eat rice as the main part of their diets. Rice bran is a component of raw rice that is obtained when it is removed from the starchy endosperm in rice milling process. Rice bran contains important bioactive phytochemicals. Bioactive rice bran oil contains tocopherols, tocotrienols, squalene,  $\gamma$ -oryzanol ( $\gamma$ -ORZ), and inositol hexaphosphate.  $\gamma$ -ORZ contains a number of phytosteryl ferulates; that is 24-methylenecyclo-artanyl ferulate (24-mCAF), cycloartenyl ferulate (CAF), campesteryl ferulate, and  $\beta$ -sitosteryl ferulate ( $\beta$ -SF). These components of  $\gamma$ -ORZ and the possible metabolite, ferulic acid (FA) have antioxidant potency considering one of useful functional food chemicals.

Recent 10 years, we attempted to identify the evidence-based therapeutic ability of  $\gamma$ -ORZ both *in vitro* and *in vivo*. We found that  $\gamma$ -ORZ works as a NF- $\kappa$ B inhibitor to block inflammatory actions in RAW264.7 macrophages, which in turn inhibited adhesion of leukocytes on endothelial cells by Lipopolysaccharide (LPS). In accordance with the results *in vitro*,  $\gamma$ -ORZ significantly ameliorated gastrointestinal inflammation in dextran sulfate sodium (DSS)-induced colitis model *in vivo*. We further found that  $\gamma$ -ORZ captures IgE, prevents it from binding to Fc $\epsilon$ R1, and attenuates mast cell degranulation *in vitro*, indicating anti-allergic action of  $\gamma$ -ORZ. On the other hand, we also found that  $\gamma$ -ORZ prevents stress-induced hypoadiponectinemia *in vivo* as a risk-factor in diabetes. Stress-induced inhibition of adiponectin production was recovered by  $\gamma$ -ORZ. This suggests that  $\gamma$ -ORZ may directly upregulate adiponectin in the blood stream and/or indirectly upregulate adiponectin via anti-stress action mediated by  $\gamma$ -ORZ.

We concluded that  $\gamma$ -ORZ possesses promising health-related benefits in the prevention of various diseases with inflammation, allergic reaction, hyperlipidemia and diabetes. More clinical trials are needed to fully realize the therapeutic potential(s) of  $\gamma$ -ORZ.

#### Related references:

- 1) BBRC (2007) 358:615 (IF: 2.392) (Cited times; 50)
- 2) Br J Pharmacol (2008) 154:812 (IF: 5.259) (Cited times; 83)
- 3) J Pharmacol Sci (2009) 111:328 (IF: 2.042) (Cited times; 36)
- 4) Phytomedicine (2010)17:152 (IF: 3.343) (Cited times; 36)
- 5) Phytomedicine (2011) 18:655 (IF: 3.343) (Cited times; 8)
- 6) Cur Topics in Med Chem (2011) 11:1847 (IF: 3.402) (Cited times; 19)
- 7) J Agri and Food Chem (2012) 60:3367 (IF: 2.857) (Cited times; 11)
- 8) Wheat and Rice in Disease Prevention and Health (2014) Academic Press, Edited by RR Watson, VR Preedy and S Zibadi, Chapter 34: P443-452 Md Shafiqul Islam et al.