

## **Effects of germinated brown rice and its bioactive compounds on the expression of the peroxisome proliferator-activated receptor gamma gene**

### **ABSTRACT**

Dysregulated metabolism is implicated in obesity and other disease conditions like type 2 diabetes mellitus and cardiovascular diseases, which are linked to abnormalities of peroxisome proliferator-activated receptor gamma (PPAR $\gamma$ ). PPAR $\gamma$  has been the focus of much research aimed at managing these diseases. Also, germinated brown rice (GBR) is known to possess antidiabetic, antiobesity and hypocholesterolemic effects. We hypothesized that GBR bioactive compounds may mediate some of the improvements in metabolic indices through PPAR $\gamma$  modulation. Cultured HEP-G2 cells were treated with 50 ppm and 100 ppm of extracts from GBR (GABA, ASG and oryzanol) after determination of cell viabilities using MTT assays. Results showed that all extracts upregulated the expression of the PPAR $\gamma$ . However, combination of all three extracts showed downregulation of the gene, suggesting that, in combination, the effects of these bioactives differ from their individual effects likely mediated through competitive inhibition of the gene. Upregulation of the gene may have therapeutic potential in diabetes mellitus and cardiovascular diseases, while its downregulation likely contributes to GBR's antiobesity effects. These potentials are worth studying further.

**Keyword:** Peroxisome proliferator activated receptor gamma; Germinated brown rice; Oryzanol; Gamma amino butyric acid; Acylated sterol glycoside