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Effects of Thai black sticky rice extract on oxidative stress and lipid metabolism gene expression in HepG2 cells

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ABSTRACT. Anthocyanins, which are found in some food, including Thai black sticky rice, are reported to have health-promoting properties. Oxidative stress plays a major role in the pathogenesis of many degenerative diseases induced by free radicals, such as cardiovascular disease, stroke and cancer. We evaluated the anthocyanin-rich extract (ARE) from Thai black sticky rice for antioxidative and antihyperlipidemic effects on HepG2 cells. Cell viability was investigated with the neutral red assay and the MTT assay, and oxidative stress was determined by the DCFH-DA assay. RT-PCR was used to evaluate the effect of ARE on LDLR, HMG-CoAR, PPAR (α1,γ) and LXRα gene expression. We found that ARE at high doses ($\geq$800 mg/L) induces cytotoxicity. However, at 600-1000 mg/L it reduced intracellular oxidative stress ($P < 0.05$) in a dose-dependent manner, and at 200 mg/L

it significantly enhanced the expression of the LDLR gene in HepG2 cells. We concluded that ARE can be beneficial for health promotion by reducing oxidative stress and enhancing LDL clearance, regulating LDLR production on the cell surface membrane, thereby maintaining lipid homeostasis.

Key words: Thai black sticky rice; Antioxidant; Oxidative stress; Lipid metabolism genes

