Oral Presentation

Sung Yod Rice Bran Hydrolysates Mitigates Hypertension and Oxidative Stress in L-NAME-Induced Hypertensive Rats

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Background and objective: Hypertension is a major risk factor for cardiovascular disease. Consumption of healthy diet has been shown to lower and maintain normal blood pressure. Nitric oxide (NO) is an important biological mediator in the regulation of cardiovascular function. Inhibition of NO synthase by N$^{\omega}$-nitro-L-arginine methyl ester (L-NAME) results in increased blood pressure and enhanced oxidative stress. Rice bran is a rich source of protein, dietary fibers and antioxidants. The present study aimed to evaluate the antihypertensive and antioxidative effects of Sung Yod rice bran hydrolysates (SRH) in L-NAME-induced hypertensive rats.

Methods: Hypertension was induced in male Sprague-Dawley rats by administration of L-NAME (50 mg/kg/day) in drinking water for 3 weeks. Simultaneously, SRH were orally administered daily at doses of 250 and 500 mg/kg/day. Rats received tap water as drinking water and orally administered with deionized water were served as normotensive controls. Blood samples and arterial tissues were collected for assay of oxidative stress markers.

Results: A marked increase in arterial blood pressure was found in L-NAME-treated rats compared to normotensive controls, and SRH in a dose-dependent manner significantly restored the blood pressure ($p < 0.05$). Increased oxidative stress such as vascular superoxide production, plasma malondialdehyde and plasma protein carbonyl was found in L-NAME treated rats. SRH supplementation alleviated these oxidative effects ($p < 0.05$). Moreover, SRH also increased NO production in L-NAME hypertensive rats.

Conclusions: This study provided the evidence that SRH may be useful for prevention and treatment of hypertension.

Acknowledgements: This work was supported by grants from Khon Kaen University, and the Agricultural Development Agency, Thailand.

Keywords: Antioxidant, Hypertension, L-NAME, Sung Yod rice bran hydrolysates