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Multiple physiological effects of dietary  $\beta$ -conglycinin in rats

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Feeding of  $\beta$ -conglycinin ( $\beta$ -CON), one of the major components of soy protein (SOY) has been shown to decrease body fat mass, and serum and liver triglyceride levels in rats, together with an increase of serum adiponectin concentration. In the present study, therefore, we examined how dietary  $\beta$ -CON affected metabolic syndrome factors in a disease animal model for obesity and hypertension. We prepared the diets containing either 20% casein (CAS), or CAS replaced 50% with SOY or  $\beta$ -CON. In the first study, Otsuka Long Evans Tokushima Fatty (OLETF) rats (6 wk-old) were fed with the diets for 13 weeks. Insulin tolerance test (ITT, 0.75 IU/kg) was performed at week 12. Although fasting glucose level was comparable among the groups, the result of ITT suggested that SOY and more so  $\beta$ -CON increased insulin sensitivity, compared with CAS in obese OLETF rats. The results were associated with an increase of serum adiponectin concentration. Also,  $\beta$ -CON, compared with CAS decreased visceral adipose tissue weight and liver triglyceride concentration. The protein-dependent decrease could be partly due to a decrease of fatty acid synthesis in the liver. In the second study, spontaneously hypertensive rats (SHR/Izm, 6 wk-old) were fed with the diets for 7 weeks. During the feeding period, tail-cuff blood pressure was measured every other week. As a result, feeding of SOY and more so  $\beta$ -CON, compared with CAS significantly suppressed both of systolic and diastolic blood pressures at week 4 and thereafter. The antihypertensive effect of  $\beta$ -CON (and SOY) could be partly associated with an increase of plasma adiponectin concentration. The results suggested that dietary  $\beta$ -CON could modulate not only lipid metabolism, but also glucose metabolism and blood pressure in rats, and then  $\beta$ -CON has potential to prevent metabolic syndrome.