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Preparation of Angiotensin I Converting Enzyme Inhibitor with Slightly Bitterness from Corn Gluten

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In this study, we attempted to prepare hydrolysates from corn gluten containing powerful ACE inhibitory activity with low bitterness. Among 6 commercial proteases, Flavourzyme showed the highest ACE inhibitory activity (IC_{50} : 0.18 mg solid). Flavourzyme (complex type), Pescalase (endo-type), and Protease A (exo-type) were used to evaluate the corn gluten hydrolysates according to the enzyme specificity. ACE inhibitory activities of the hydrolysates had same trend as protein content. Flavourzyme and Pescalase showed the high ACE inhibitory activity (IC_{50} : 0.18 mg solid and IC_{50} : 0.17 mg solid, respectively) after 8 hrs and 1 hr of hydrolysis, respectively. However, Protease A showed no changes of ACE inhibitory activity after 1 hr of hydrolysis. A mixture of Pescalase and Protease A (1:1, w/w) was applied to the preparation of corn gluten hydrolysate. The hydrolysis time by the enzyme mixture reduced from 8 hr to 4 hr comparing with Flavourzyme. Surface hydrophobicity of the hydrolysate with the enzyme mixture was lower than that of the hydrolysate with Flavourzyme, but there was no significant difference at $p < 0.05$. Average hydrophobicity (Q value) of the hydrolysates with the Flavourzyme and the enzyme mixture was to be less than 1,400 cal/mole, was assumed that there was no difference in bitterness between the hydrolysate with Flavourzyme and that with the enzyme mixture.

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Anti-stress Effect and Functionality of Yeast Hydrolysate SCP-20

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SCP-20, SCP-carbon which is a treated SCP-20 with active carbon, and extracts of Saint Johns wort (St-wort) tested to compare their anti-stress effects. When the SCP-20, SCP-carbon and St-wort were ingested to the rats for 8 days prior to receive the 48 hrs stress period, they showed anti-stress effects on the changes of weight for the adrenal, spleen, thymus and thyroid in comparison with the stressed control. The levels of epinephrine and norepinephrine in plasma were increased by immobilized stress. St-wort, SCP-20, and SCP-carbon lowered the elevated levels of epinephrine and norepinephrine to near control levels. Emulsifying and foaming properties of the SCP-20 and SCP-carbon were measured at the range of pH 3-8. The emulsifying activities of yeast hydrolysates increased in a high level near neutral pH, and but decreased in acidic conditions. The emulsifying activity in SCP-carbon was higher in the acidic pHs than that in SCP-20. The patterns of the emulsion stabilities for SCP-20 and SCP-carbon were similar to those of the emulsifying activities. SCP-20 and SCP-carbon showed poor foaming capacity from pH 4.0 to 7.0. Especially, SCP-carbon showed lower foaming capacity and foam stability than SCP-20.