Thesis Title	Antioxidant Capacities of Enzymatic and Chemical Modified Soy Protein Isolate
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ABSTRACT

Antioxidant capacities of enzymatic and chemical modified soy protein isolate were studied. The enzymatic hydrolysis of soy protein isolate was done by using papain (0.5 gm enzyme /100 protein) and alcalase (0.2 gm enzyme / 100 protein). The hydrolysis periods were varied 15, 30 and 60 min. For chemical reaction, succinic anhydride was added into the protein solution at 0.5 gm anhydride/100 gm protein. The succinylation times were varied at 15, 30, 60 and 120 min.

In case of papain, it was found that the degree of hydrolysis (DH) increased with increasing in reaction time and SDS-PAGE of soy protein hydrolysates showed that 7S and acidic subunit were disappeared, while the increased intensity of low molecular weight band were observed at the bottom of the gel.

In the case of alcalase, it was found that the degree of hydrolysis (DH) increased with increasing in reaction time and SDS-PAGE of soy protein hydrolysates showed that 7S and 11S globulin were disappeared, while the increased intensity of low molecular weight band were observed at the bottom of the gel. The solubility properties of both the enzymatic hydrolysates were increased. The action of the enzymatic hydrolysate in a linoleic oxidation and scavenging-radical system were significantly improved compared to those of the native protein. Moreover the antioxidant capacities were increased with increasing in reaction times and concentrations. From the result of using enzymatic, the tendency of hydrogen peroxide scavenging activity and inhibition of linoleic oxidation of the hydrolysate from alcalase was better than those of the hydrolysate from papain.

In the case of succinylation, it was found that the succinylation did not affect the protein subunit as determined by SDS-PAGE. The modified proteins were increased in the solubility. The

antioxidant capacities of the modified proteins were strongly increased when the reaction time was increased from 15 min to 60 min. However, the activities were decreased when the reaction time was 120 min. The results showed that the scavenging activity against ABTS of the protein modified by enzyme was higher than the activity of the protein modified by succinylation.