Saowapa Jantad 2014: Dried Protein Hydrolysate Powder from Chicken Breast Meat with Enzymatic Hydrolysis Using as Ingredient in Prototype Beverage Product. Master of Science (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Assistant Professor Tantawan Pirak, Ph.D. 126 pages.

The objective of this research was to study optimum conditions for producing protein hydrolysates powder from chicken breast meat using two different commercial proteinase (Alcalase® and Flavourzyme®) hydrolysis and study their Angiotensin converting enzyme (ACE) inhibitory activity, degree of hydrolysis (DH) chemical and physical properties. The protein hydrolysates powder with highest ACE inhibitory activity was selected to study functional properties including molecular weight, solubility, emulsion, foaming capacity and fat absorption. The utilization in prototype beverage product was also studied. Factors studied in the study of optimum conditions was enzyme concentration (0.3, 0.6 and 0.9 of protein), substrate to buffer solution ratio (1:2 and 1:3) and hydrolysis time (60, 120, 180, 240 and 300 min). The experimental design was factorial in CRD. Protein hydrolysates powder from chicken breast meat hydrolyzed with Alcalase® had higher ACE inhibitory activity than Flavourzyme®. Hence, protein hydrolysates powder from chicken breast meat hydrolyzed with Alcalase® was selected . The ACE inhibitory activity of this sample (0.9% enzymatic concentration, substrate to buffer solution ratio at 1:2 and hydrolysis time at 180 min) was 73.54% with DH at 33.82%, moisture content at 7.17%, protein content at 84.22%, yield at 9.71%, lightness (L*) at 78.72, redness (a*) at 0.42 and yellowness (b*) at 30.91, respectively. The functional properties of the selected protein hydrolysate powder was determined. The protein hydrolysate powder had molecular weight below 5 kDa, solubility capacities at 95%, emulsion capacities at 153.51 $m^2/g$, emulsion stability at 33.11 min, foaming capacities at 2.5 and fat absorption at 1.46, respectively. The feasibility for using the selected protein hydrolysates powder as an ingredient in prototype beverage product and its effect on sensory, physical, chemical and microbial properties of the beverage were determined. It was found that prototype beverage product composed of 10% concentration grape juice, 80.43% water, 9.5% sucrose, 0.07% citric acid and 0.0017% protein hydrolysates powder. This sample had the highest overall liking score and lightness (L*) at 4.59, redness (a*) at 20.50, yellowness (b*) at 6.89, pH at 3.00, acid concentration of 0.25%, total soluble solid at 15°brix, total bacterial and total yeast and mold less than 10 cfu/ml.

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