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SUDDHIBHONG BRIXPRASERT : PRODUCTION OF PORCINE BLOOD PROTEIN HYDROLYSATE FOR CHICKEN BALL. THESIS ADVISOR : ASSOC. PROF. PANTIPA JANTAWAT, Ph.D., DR. ROMANEE SANGUANDEEKUL, Ph.D.

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Hydrolysation of red blood corpusle with Alcalase®(0.6 unit/g) was studied. Enzyme/substrate (E/S) concentration was varied at 2,4,6,8 and 10% by wt. and the hydrolysation was carried out at 35, 45, 55 and 65°C for 20 min. Logarithrnic regression of degree of hydrolysis (DH) and times at 10, 20, 30, 40, 50 and 60 min. was figured out. Heme content recovery (HC) and binding ability of hydrolysates (DH 50, 60, 70, 80, 90 and 100) in chicken ball were measured. The best quality hydrolysate was bleached with activated carbon powder, 10,20 and 30% by wt. at 35, 45, 55 and 65°C and the bleaching time of 20, 40 , 60, 80 and 100 min were later studied. Drying of the bleached hydrolysate was accomplished either with spray drying or freeze drying. Protein solubilities at pH 4-10 along with binding ability of the hydrolysate in chicken balls were measured and the results compared with those obtained from chicken balls produced with fresh frozen hydrolysate, egg white powder, caseinate or isolated soy protein (ISP). Study on storage stability of the hydrolysate powder in low density polyethylene(LDPE) or in aluminum foil laminate bags was carried out.

The highest DH was obtained when red blood corpusle was hydrolysed at 55°C, 8% E/S. The logarithmic regression equation found was $y = 16.473+20.897 \ln x$, $r^2 = 0.985$. Highest binding ability in chicken ball was obtained when using either the DH90 or the DH 100 hydrolysate. Optimum bleaching was acheived at 55°C, 80 min, with 20% activated carbon powder and the DH-100-bleached-hydrolysated provided chicken ball with the best color quality. The spray drying and freeze drying hydrolysates have 81.37 - 81.68% proteins, 4.11 - 4.09% ashes, 5.26 - 6.49% moistures, 0.0035 - 0.0036 % Fe, and 96.8% of Fe was released from the hydrolysate. A better protein solubility was obtained in the freeze drying hydrolysate but the binding abilities and the sensory qualities of the two samples were not different ($P > 0.05$). Chicken ball with hydrolysate powder has texture comparable to those produced with other proteins. Hydrolysate powder in aluninum foil laminate bag can be stored for 12 weeks without changing of moisture and protein solubility but decreasing in total microbial count was observed.