The Study of Protein Hydrolysis and Peptide Antioxidants Activity of Chicken Slaughterhouse Waste and Its Potential for Feed Additives

Title	The Study of Protein Hydrolysis and Peptide Antioxidants Activity of Chicken Slaughterhouse Waste and Its Potential for Feed Additives
Author Order	2 of 4
Accreditation	
Abstract	Ensuring food safety in livestock requires specific feeding technology in agriculture by using feed additives in the form of antibiotics, prebiotics, probiotics, acidifiers, hormones and enzymes. Bioactive peptides improve the health status of humans and animals. Protein hydrolysis produce peptides that are safe, quickly metabolizable, less risky for livestock products to have contaminant residue. Bioactive peptides are still bound to the original protein, so they need to be released through an enzymatic process. This research explored the potential of chicken slaughterhouse waste to produce biopeptides by hydrolyzing proteins using various proteolytic enzymes. The slaughterhouse waste included chicken feet, intestines, filleting waste and blood plasma. The proteolytic enzymes used were papain, bromelain, protease by Rhizopus oligosphorus, probiotic protease. The observed variables were dissolved protein content with and without precipitation, protein hydrolyzate content, and the degree of enzyme hydrolysis. The research was conducted using exploratory methods. The results showed that the dissolved protein content in the chicken slaughterhouse waste protein concentrate was 1,585 mg/ml (feet), 2,361 mg/ml (intestines), 1,787 (filleting waste) and 2,372 mg/ml (blood plasma). Blood plasma protein concentrate showed the highest yield among other chicken slaughterhouse waste protein concentrates, namely 0.14 mg/ml (hydrolysis of papain), 0.18 mg/ml (hydrolysis of bromelain), 0.56 mg/ml (hydrolysis of R.oligosphorus protease) 0.68 mg/ml (hydrolysis of probiotic proteases). The highest degree of hydrolysis was shown in blood plasma hydrolyzates using probiotic protease enzymes, namely 28.72%. The highest antioxidant activity was 92.92% as observed in chicken feet protein hydrolyzate which was hydrolyzed using papain. Therefore, chicken feet, intestines and fillet waste can produce protein concentrates through precipitation using ammonium sulfate, and plasma using acetone. The highest protein concentration was in blood plasma protein which also produced the highest hydrolysis from hydrolyzing blood plasma proteins with hydrolyzed probiotic protease. The highest antioxidant activity was observed in chicken feet protein hydrolyzate which was hydrolyzed using papain enzyme and incubated for 6h.
Publisher Name	Faculty of Animal Science, Jenderal Soedirman University in associate with the Animal Scientist Society of Indonesia (ISPI) and the Indonesian Association of Nutrition and Feed Science (AINI)
Publish Date	2022-07-29
Publish Year	2022
Doi	DOI: 10.20884/1.jap.2022.24.2.133
Citation	
Source	ANIMAL PRODUCTION
Source Issue	Vol. 24 No. 2 (2022)
Source Page	97-103
Url	https://jap.fapet.unsoed.ac.id/index.php/JAP/article/view/133/74
Author	Dr TITIN WIDIYASTUTI, S.Pt, M.Si