

Keratinase, a bioactive compound for production of feather meal used as a protein source in feed industry

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Abstract

Feather waste is a by product from poultry industry which is generated in a large amount each year. It consisted of more than 85% protein called "keratin" which can be utilized by a limited basis as a dietary protein supplement for animal feedstuffs due to poor digestibility. Previously, steam pressure-cooked treatment was used to make the feather more digestibility. However, it required significant energy and also destroyed certain amino acids. Biological treatment of enzyme technology can be another choice to improve its nutrition value. This presentation focused on characterization of effective bacterial strains possessing effective keratinase with high feather digestibility and enzyme production by optimization of medium and production process condition. It was found that feather meal prepared by enzymatic reaction of keratinase K82 and thermal process exhibited equally quality of amino acid contents to the one of commercial keratinase, Valkerase and the control. However, it provided higher pepsin digestibility of 77%. By cytotoxicity test and subchronic animal trial to the tests of various keratinase concentrations used for feed formulation, the results showed no toxicity to human larynx epithelial, human dermal fibroblast and animal physiology. These lead to the potential use of keratinase for production of feather meal as a protein source in feed industry in the future.

Biography

Sunee Nitisinprasert has completed her Ph. D in Microbiology and Genetic Engineering at Helsinki University, Finland (1990). She is currently an Associate Professor at the Department of Biotechnology, Faculty of Agro-Industry, Kasetsart University, Chatuchak, Bangkok, Thailand. Sunee Nitisinprasert has sixty international and national scientific paper in the areas of lactic acid bacteria, antimicrobial substances, probiotic, prebiotic, microbiota and hydrolytic enzymes; and ninety seven international and national paper published in international conferences. Sunee Nitisinprasert is also a member of various national and international scientific organizations, such as in the Thai Society for Biotechnology, Thailand Lactic Acid Research Group, Asian Federation of Lactic Acid Bacteria, International Union of Microbiology Societies and Poultry Science Association.