

**DETERMINATION OF THE FUNCTIONAL
PROPERTIES OF HYDROLYZED OVALBUMIN
INCORPORATED DRY CURED HAM**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture

Uva Wellassa University

In partial fulfillment of the requirements of

The Degree of

Bachelor of Animal Science

By

DON PREMARATHNAGE MANULA KITHMINI GUNASEKARA

Animal Science Degree Programme

Department of Animal Science

Faculty of Animal Science and Export Agriculture

Uva Wellassa University

2018

ABSTRACT

Ham is one of the most popular cured meat products used all over the world. Potassium and sodium salts of nitrite and nitrate are commonly used as a preservative agent and color enhancer in dry cured ham production. However, high use of these chemicals may lead to health risks. Ovalbumin is the major chicken egg white protein that can be used to produce several bio-active peptides with various functional properties. Objective of this study was to use these peptides as a nitrate replacer in dry cured ham. Dry cured ham was produced incorporating nitrite: ovalbumin hydrolyzates in ratio of 0:0 (no curing salt, as negative control, Tr₁), 0:100 (Tr₂) 125ppm nitrite as positive control, 0:100 (Ovalbumin, Tr₃), 0:100 (Hydrolyzed Ovalbumin, Tr₄), 50:50 (Tr₅), 75:25 (Tr₆) and 25:75 (Tr₇). Ovalbumin was hydrolyzed using pepsin (Enzyme: Substrate, 1:100) at just after incubation at 37°C followed by heat inactivation (15 min/100 °C). Prepared ham samples were vacuum packed and stored under freezing condition [-18 °C] for further analysis. Sensory analysis was carried out by 30 untrained panelists. Antimicrobial activity was tested for locally isolated *Escherichia coli* and *Salmonella*. Keeping quality was checked with pH and TBARS assay with 03 days intervals up to 40 days. Color of the samples was initially measured using a colorimeter. Also Fe⁺² Chelating activity of the samples were determined. According to the sensory analysis, there was no significant difference in overall acceptability among the treatments (p>0.05). Taste was better in positive control (p<0.05). Redness and lightness were significantly different between treatments (p<0.05), yellowness of the treatment did not show any difference (p>0.05). pH and the level of oxidation were within the acceptable range among the treatments during the storage period and all samples were showed Fe⁺² releasing property. It can be concluded that peptides derived from hydrolyzed ovalbumin can be used as an effective curing salt replacer for dry cured ham.

Keywords: Dry cured ham, Hydrolyzed ovalbumin, Sensory properties, Curing salt