DELAYING THE OXIDATIVE RANCIDITY OF "TILAPIA" FISH BALLS BY INCORPORATING NATURAL *ALOE VERA* PLANT EXTRACT AS AN ANTIOXIDANT

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
in partial fulfillment of the requirement of
the degree of
Bachelor of Animal Science

By

DAMMAGE HARIENDRA CHATHURIE WIJEGUNATHILAKA

Animal Science Degree Programme
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
2013

ABSTRACT

Nowadays, oxidative rancidity is a major problem of food industry in Sri Lanka. So synthetic antioxidants are used to delay that process. But there is a problem of using synthetic antioxidants due to carcinogenic effect and other bad effects. So they try to use natural antioxidant to avoid that problem and that antioxidant helps to delaying the oxidative rancidity of the product. Also there is an increasing interest for value addition for fresh water fish species. Through that, fresh water fish industry was developed in Sri Lanka. Therefore, it is economically viable to use locally available resource of *Aloe vera* as natural antioxidant. Hence, present study was carried out check the suitability of incorporation *Aloe vera* gel to Tilapia fish ball in order to delay the oxidative rancidity.

First part of the study was conducted to develop the recipe of Tilapia fish balls and then replaced the water amount and synthetic antioxidants by using natural *Aloe vera* gel which is rich in natural antioxidant and water. *Aloe vera* gel was extracted from the inner part of *Aloe vera* leaves at room temperature. Whole procedure was consisted two parts that three preliminary trials and final experiment for selecting a reference sample recipe and two preliminary trials and final experiment for selecting the best three samples from *Aloe vera* incorporated fish ball samples (using *Aloe vera* percentages of 0.72%, 1.39%, 2.08%, 2.76%, 3.45% of fish ball samples) and the controlled sample. Control sample, 2.76% *Aloe vera* incorporated sample and 3.45% *Aloe vera* incorporated sample were selected as the best three samples through the sensory evaluation test. Then got an idea about the control sample and *Aloe vera* incorporated sample through the laboratory test results. Minitab 16 and Microsoft office Excel software packages were used to statistical analysis.

Aloe vera gel is incorporated as the natural antioxidant to the fish ball product. According to the sensory evaluation results, it was given good sensory attributes to the product. Also through the laboratory test results, *Aloe vera* incorporated products were showed best results. Those products were showed the somewhat higher results than synthetic antioxidant using products in proximate analysis results. The results of microbiology test were better than the synthetic antioxidant using product. According to the results of keeping quality tests such as pH, water holding capacity, TBA value in natural antioxidant incorporating product was showed best results than the synthetic antioxidant using products. So the *Aloe vera* can use as the natural antioxidant source instead of synthetic antioxidant.