

## Development of Ovo-Vege Fingers

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### Introduction

As a developing country, most of the people in Sri Lanka are facing huge health hazards due to the sedentary life styles and improper nutritional habits. There is evidence that consumption of vegetables is important for human health, as they are good sources of dietary fibers, antioxidants, carotenoids, sulfur-containing compounds, water soluble vitamins and minerals (Steffen, 2009). Different studies have shown that antioxidants can play a key role in delaying elements and conditions that are associated with aging such as cancer, heart disease, decreased immune function, and visual and cognitive impairment (Tapsell *et al*, 2006). Therefore, this research was carried out to develop a vegetable based finger by incorporating egg white powder as a solution for various health effects occurred due to the consumption of convenient processed meat products.

### Methodology

The current study was carried out at Keells food products PLC (KFPL), Ekala, Ja-ela. Laboratory analysis was done at KFPL and Uva Wellassa University laboratories. Four experimental trials with different treatments were conducted during this study. In trial I, proper combination of egg white powder and emulsion quantity was evaluated on the textural basis. Trial II was carried out to find out the appropriate spice combination suitable for the product. In trial III, jackfruit to carrot combination was evaluated and trial IV was done in order to find the best overall acceptability and finally three treatments were prepared and evaluated on sensory, chemical and microbiological basis. The sensory evaluation was done using 15 trained panelists twice at weekly intervals. In chemical analysis, proximate composition was determined for moisture content, crude fat, total solid, crude protein, ash and for organic non fat content. pH value and Water holding capacity were evaluated in weekly intervals for four weeks and microbiological analysis was done for *Escherichia coli*, *Salmonella*, *Staphylococcus aureus* and for Total Plate Count (TPC). The sensory data were analyzed using non-parametric procedure, according to the Friedman test using SAS (SAS Institute Inc., 2000) software programme. Complete Randomized Design (CRD) was conducted and data obtained from chemical and microbiological tests were analyzed using analysis of variance (ANOVA) using the General Linear Model (GLM) procedure of SAS (SAS Institute Inc., 2000). Significant means of treatments were separated using the Least Significant Difference ( $P < 0.05$ ) test (LSD).

### Results and Discussion

According to the sensory evaluation, the formulation with 25% of egg white powder and 75% of emulsion (T1) has given a desirable texture and selected in trial I. In trial II, Chinese finger formulation (T2) was selected due to sweet and hot flavor.

In trial III, the treatment consisted with 60% of jackfruit to 40% of carrot (T3) was selected due to better mouth feel and proper toughness.

In the first sensory evaluation of T1, T2 and T3, there was a significant difference ( $P < 0.05$ ) among three samples regarding color, texture and spiciness and the T1 was selected as the best product. In the second sensory evaluation, there was a significant difference ( $P < 0.05$ ) between three samples regarding color, spiciness, texture and overall acceptability yet the mean scores for the all sensory characters were reduced. Therefore, during the frozen storage, overall acceptability of the products was altered considerably.

Table 1 Proximate composition and keeping quality characters of ovo-vege fingers

Parameter (Values during Storage at -18 ° C)	Treatments		
	T1	T2	T3
<b>Proximate composition (%)</b>			
Moisture	54.52	59.32	51.90
Total solid content	45.48	40.68	48.10
Crude fat	17.22	12.02	12.26
Ash	2.93	2.60	3.03
Crude protein	18.31	22.48	25.31
Organic non fat	25.33	26.06	32.81
<b>pH</b>			
1 <sup>st</sup> week	7.85	7.42	7.40
2 <sup>nd</sup> week	7.72	7.51	7.56
3 <sup>rd</sup> week	7.86	7.39	7.38
4 <sup>th</sup> week	7.75	7.25	7.31
<b>Water Holding Capacity</b>			
1 <sup>st</sup> week	43.59	44.63	41.65
2 <sup>nd</sup> week	42.90	43.58	41.36
3 <sup>rd</sup> week	42.40	43.10	40.85
4 <sup>th</sup> week	41.33	42.48	38.52

As indicated by the Table.1, the highest moisture content was observed in T2 followed by T1 and T3. That could be due to low content of egg white present in T2. Egg white needs a considerable amount of water to break the hardness of the product. Highest protein content was observed in T3 and that could be due to the high levels of isolated soy protein and egg white present in the formulation. Furthermore, highest crude fat content was observed in T1

followed by T3 and T2, since the crude fat content has increased with the increase of the vegetable oil content of the emulsion.

The pH values of three samples showed a slight elevation and thereafter gradual reduction. This situation can occur due to chemical degradation by food enzymes, converting food enzymes into lactic acid or chemical degradation by microbes or combination of these three incidences. Commonly the water holding capacity is reduced with the reduction of pH. The water retention power in vegetables is lower than in meat. Therefore, the reduction of water holding capacity in this vegetable based finger has to be solved.

TPC in the samples complied with the requirement of Sri Lankan Standard (SLS). Microbiological results indicated that TPC and *Staphylococcus aureus* have fulfilled those requirements during frozen storage.

### **Conclusion**

Ovo-vege finger formulation having 7.7 % egg white powder was the best formulation having better sensory, nutritional and keeping quality characters.

### **References**

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