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DEVELOPMENT OF BANANA FLOUR BASED BABY FOOD PRODUCTS

By

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DECLARATION

The work described in this thesis was carried out by me under the supervision of Dr. K.K.D.S. Ranaweera, Head, Department of Food Science & Technology, University of Sri Jayewardenepura and a report on this has not been submitted in whole or in part to any University or any other institution for another Degree/ Diploma.

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DECLARATION OF THE SUPERVISOR

I, Dr. K.K.D.S. Ranaweera certify that the above statement made by the candidate is true and that this thesis is suitable for submission to the University for the purpose of evaluation.

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ABSTRACT

Banana, *Musa* species is one of the major fruit cultivated in Sri Lanka. Embul kesel is the most common and is cheaper banana variety in the local market. Bananas are subjected to post harvest losses during their reach to market place. In the present study, an attempt was made to determine the maturity index to banana (Embul variety), determine the banana flour properties and preparation of banana flour based baby food products.

The pH value, Total Soluble Solid and Penetration are suitable maturity indices for banana. Weight, Length and Diameter vary from plant to plant. Full three-quarter stage is the correct maturity stage for harvesting before onset of ripening.

Oven dried banana gave fine flour with little banana flavour. Recovery percentage of banana flour is 18.06% from the fresh banana or 27.69% from the pulp weight. Banana flour can be stored in polythene pouches for 10 months without changing the quality. Quality of the banana flour was assessed by several methods. Inhibitors such as Sodium Metabisulphite (SMS), Citric acid and Ascorbic acid were used to prevent the browning reactions during processing of flour. SMS is the most suitable inhibitor than others. Microbial examination was done to determine colony forming units in banana flour and

cookies as well. Number of colony forming units (cfu) in banana flour is about 17 X 10^4 and cfu in cookies is about 9 X 10^2.

Starch was isolated from raw banana and examined under the microscope. Starch granules are elongated angular shape (carrot root shape) and white in colour. Starch recovery percentage of Embul banana is 1.88% from wet basis or 6.78% from dry basis. Gelatinization properties of banana flour also examined. Gelatinization temperature is 78-90 °C and gave a sharp high peak. Viscosity of banana flour is 1470 Brabender units. Flour was gelatinized well and gave thick paste.

Proximate analysis carried out to determine the chemical (nutritional) composition of banana flour; moisture 4.8 ± 0.04 %, fat 1.015 ± 0.04 %, protein 1.542 ± 0.06 %, fiber 6.1±0.03 %, Ash 2.16 ± 0.08 %. Banana flour has high fiber and ash content and low fat and protein content. Carbohydrate content was determined by calculation is 84.38%.

Banana flour used for prepares two types of baby cereals and two types of cookies. Twenty five to twenty percent (25-20 %) banana flour was added to prepare banana rice baby cereal. Home made baby cereal and extruded baby cereal were made according to the modified recipes. Sensory evaluation was carried out with 25 untrained panelists to select the best combination of banana flour for cookies showed that the cookies with fifteen percent (15%) Banana flour was satisfactory for prepare banana rice cereal cookies (Teething biscuit).