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DEVELOPMENT OF AN INTEGRATED PROCESS FOR THE UTILIZATION OF COCONUT CONTENTS

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DEVELOPMENT OF AN INTEGRATED PROCESS FOR THE UTILIZATION OF COCONUT CONTENTS

By

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Thesis submitted to the University of Sri Jewardanapura for the award of the Degree of Masters of Food Science and Technology.

DECLARATION

The work described in this thesis was carried out by me under the supervision of Prof.Arhtur Bamunuarachchi and a report on this has not been submitted in whole or part to any university or any other institution for another degree.

Date: 15.08.2015

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(M.J.M.Hazzan)

We certify that the above statement made by the candidate true and this thesis is suitable for submission to the University purpose of evaluation.

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ABSTRACT

Coconut is a widely used plantation crop in Sri Lanka. Sri Lanka is fifth leading country in the world that grows coconut. The coconut milk extracted from the scraped coconut kernel is used in the preparation of many curry dishes. But coconut water is discarded by people, and so is the residue resulting post of extraction of the milk. Coconut oil is mostly extracted by pressing the dried kernel and it is the main domestically used cooking oil in Sri Lanka. This post oil extracted residue is thrown away in the home. Commercial oil extraction plants direct this residue or cake as an animal feed, known as poonack.

The research project was executed with the intention of obtaining maximum benefits, where all coconut kernel parts were converted to valuable products.

The scraped coconut kernel was dehydrated and the virgin coconut oil was extracted. The resulting residue was mixed well with coconut water obtained in the process, and pressed to obtain a low fat coconut milk fraction that was stabilised. The remaining final residue was dried and packeted. The milk and the final residue was examined for their proximate components.

Thus the developed process made use of the entire content of coconut kernel, without

Discarding any of the components.

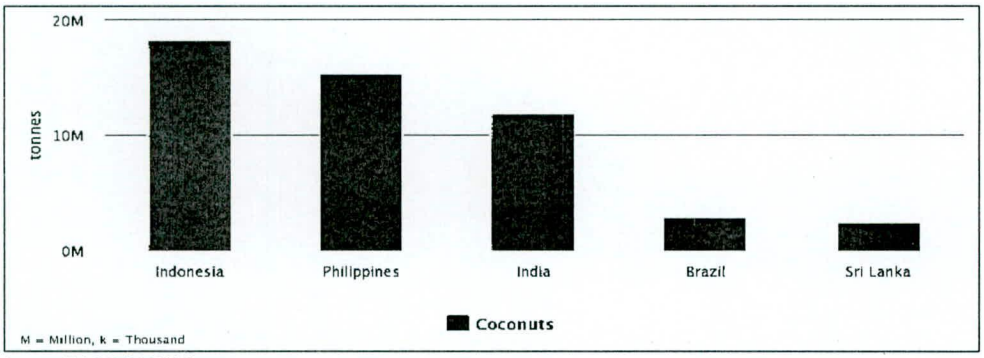
CHAPTER 1

INTRODUCTION

1.1 Introduction

Coconut (cocos *nucifera* L.) is a widely used plantation crop in Sri Lanka and top fifth of the world. The coconut milk extracted from the scraped coconut kernel is used as a broth/liquid in the preparation of curried dishes. The scraped kernel itself is used in the preparation pol-sambol (coconut sambol) in every house hold kitchen. Coconut water is discarded by people, and so is the residue resulting post of extraction of the milk. Coconut oil mostly extracted by pressing the dried kernel is used as the main domestically used cooking oil in Sri Lanka. Desiccated coconut, coconut milk, virgin coconut oil, coconut oil, coconut milk and milk powder and the canned or bottled coconut cream are the mainly manufactured coconut content based products in Sri Lanka. At the current time there are a few organisations that bottle/pack coconut or king coconut (thambili) water as a processed and preserved product. An analysis of the coconut product usage present a situation, that at almost all location it is used, only one or two components amounting to about 30 % -40% are used, the balance being discarded.

Figure 1.1 Top five coconut producing countries



(source:FAOSAT-2015)

This plant's every part is useful to human life. It plays an important role in the socio economic life of the large number of people in Sri Lanka

Large variety of coconut products are exported, which generates considerable amount of foreign exchange from coconut kernel products such as desiccated coconut, virgin coconut oil , coconut milk powder , coconut milk, , coconut oil, fresh nuts, copra, defatted coconut etc and coconut non kernel such as fibre products, shell products and other products. Coconut kernel is widely consumed by Sri Lankan as coconut milk, coconut oil and fresh form.

As well as coconut is playing major role in nutritional quality of human life by utilizing by coconut products.

According to coconut development board (CDA) of Sri Lanka, average composition of coconut is 370 g of kernel, 120 g of water and 160 g of shell in average size of 650 g coconut. The edible portion of coconut is kernel only, but after extracting milk from household level residue amount is 300-320 g is throwing away or discarded and water also discarded. That discarded amount is 64% of total coconut content.

1.2 Domestic utilization

Fresh coconut consumption in Sri Lanka is 0.975 nut per day at a house hold need and it is 156.15 million nuts per month as well as 1873.8 million nuts per year used. Average coconut kernel or meat amount is 370 g per coconut, coconut water amount is 120g and shell is 160g in a coconut weight of an average 650 g. Normally coconut milk extracting at house hold level is 40-50 ml per nut without adding water resulting the residue amount is 300-320 g per nut. Actual use of coconut is around 11% in a house hold use. Total coconut water is thrown away and residue after extracting coconut milk is also discarded