DOI :10.31357/fapsmst.2015.00426

DEVELOPMENT OF CINNAMON FLAVOURED INSTANT PORRIDGE POWDER USING AMYLASE TREATED KITHUL FLOUR (*Caryota urens*)

BY

Kuhanneya Kugamohan

Thesis submitted to the University of Sri Jayewardanapura for the award of Degree of Master of Science in Food Science and Technology in 2015

DECLARATION

The work described in this thesis was carried out by me under the supervision of Dr.R.A.U.J.Marapana, Senior Lecturer, Department of Food Science and Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura and Dr. P. Ranasinghe, Senior Deputy Director, Herbal Technology Section, Industrial Technology Institute and a report on this has not been submitted in whole or in part to any University or any other Institution for another Degree or Diploma.

8/12/2015 ..... K. Kuhanneya .....

Date

Kuhanneya Kugamohan

We 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.

.....8/12/2015.....

Dr. R.A.U.J. Marapana
Senior Lecturer,
Department of Food Science and Technology,
Faculty of Applied Sciences,
University of Sri Jayewardenepura,
Gangodawila,
Nugegoda,
Sri Lanka.

.....

Dr. P. Ranasinghe,
Senior Deputy Director,
Herbal Technology Section,
Industrial Technology Institute,
Bauddhaloka Mawatha,
Colombo – 7,
Sri Lanka.

DEDICATION

Affectionately dedicated to

my Parents and

my loving Husband

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENT

First and foremost I wish to express my sincere gratitude to my internal supervisor Dr. R.A.U.J. Marapana, Department of Food science and Technology, University of Sri Jayewardenepura for his valuable guidance, support and precious advice.

Then I wish to express my sincere thanks to my external supervisor Dr. P. Ranasinghe, Senior Deputy Director, Industrial Technology Institute (ITI) for his valuable advice, continuous encouragement and supervision and also would like to thank for giving me the opportunity to carry out my research at ITI.

It is a pleasure to convey my sincere thanks to all the staff members of ITI for their kind support.

My special thanks to the academic and non-academic staff members of the Department of Food Science and Technology, University of Sri Jayewardenepura for their valuable contribution and advice.

Finally my heartfelt thanks to my loving parents, my husband and my dear friend for their invaluable contribution and moral support throughout my research.

ABBREVIATIONS

PB	Phosphate Buffer
TPC	Total Polyphenolic Content
FRAP	Ferric Reducing Antioxidant Power
ORAC	Oxygen Radical Absorbance Capacity
DNS	Dinitro salysilic acid
HPLC	High performance liquid chromatography
CP	Cinnamon Polyphenols.
UV	Ultra Violet.
AC	Antioxidant Capacity.
IR	Infrared
DSC	Differential Scanning Calorimetry.
GCWS	granular cold water soluble starch.

DEVELOPMENT OF CINNAMON FLAVOURED INSTANT PORRIDGE POWDER USING AMYLASE TREATED KITHUL FLOUR (*Caryota urens*)

Kuhanneya Kugamohan

ABSTRACT

Traditionally, Kithul flour which is extracted from *Caryota urens* L. palm has been used in variety of health foods including Kithul gel and thick porridge. However, as yet there is no significant improvement in these traditional products in order to suit modern consumer preferences. Therefore, this study was focused to develop a ready to serve porridge powder with low gelatinization and improved bioactive properties using enzyme hydrolyzed Kithul flour.

Kithul flour purchased from market was used for this study and different concentrations of heat resistant alpha amylase were used for hydrolysis of kithul flour. After digestion, maltose content was evaluated using ditro-salicylic acid method. Then samples were tested for gelatinization. Hydrolyzed samples with low gelatinization were selected for the development of less viscous porridge. The porridge samples were prepared after number of primary experiments with different flour:amylase:cinnamon extract ratios as 100g:0.1g:0.1ml, 150g:0.1g:1ml and 100g:10g:0.5ml. Sensory evaluation was conducted for 30 untrained panelists. The results were analyzed using computer aided MINITAB 17.2.1 statistical analysis package according to Kruskal Wallis test at 95% level of significance. The best sample with 100g:10g:0.5ml flour: amylase: cinnamon extract ratio was selected from the analysis. Total Polyphenolic content and Total

Antioxidant content assay was carried out for the commercial flour and the developed product.

Total Antioxidant content of the developed product was not significantly different from the commercial kithul flour. Proximate analysis was carried out for the commercial kithul flour and the developed product where the Ash content, crude fiber content, protein content of commercial flour and cinnamon flavoured instant Kithul porridge powder was (0.3%, 0.3%), (0.7%, 0.6%), (0.8%,0.9%) respectively. The Moisture content of the commercial flour was14.2% and for the product was 6.4%, and the Fat content of the commercial flour was 0.12% and for the product was 0.2% and the carbohydrate content of the commercial kithul flour was 84.7% and for the product was 92.2%.

The developed porridge is a potential alternative for traditional product with attractive properties including less thickness, sweetness without added sugar, easy to prepare and enhanced bioactive properties due to incorporation of herbal extract like cinnamon.