

**OPTIMIZATION OF EXTRACTION AND
STABILITY OF NATURAL COLOURS OBTAINED
FROM DIFFERENT PLANT SOURCES**



By

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This Thesis submitted in partial fulfilment of the requirements for
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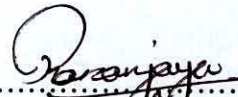
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DECLARATION

The work described in this thesis was carried by me, under the supervision of Professor K.K.D.S. Ranaweera and the report on this thesis has not been submitted in whole or in part of any University or any other institution for another Degree/ Diploma.

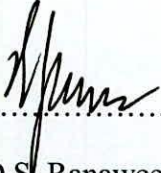
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**THIS EFFORT IS DEDICATED TO
MY PARENTS, ALL MY TEACHERS &
ALL THE SUPPORTIES**

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ABBREVIATIONS

A	Absorbance
Conc.	Concentrated
°C	Celsius
D	Di pole moment
g	gram
HCL	Hydrochloric acid
Kg	Kilogram
M	Molarities
mg	milligram
ml	millilitres
nm	nanometres
NaOH	Sodium Hydroxide
RT	Room Temperature
w	weight
%	Percent

OPTIMIZATION OF EXTRACTION AND STABILITY OF NATURAL COLOURS OBTAINED FROM DIFFERENT PLANT SOURCES

By Gangodage Rananjaya Madushanka Wimalasena

ABSTRACT

Colours are one of the widely used food additives in the present food industry. There are several purposes of the uses of colours in the food industry and the main purpose is to give an attractive appearance to the food. Food colours are mainly categorized in to two main groups, i.e Artificial and Natural. Natural colours come under three categories, namely Porphyrin, Carotenoid and Flavonoid. The present food industry is seeking opportunities and possibilities of using natural colours instead of artificial colours and simultaneously, consumers also show interest in food where natural colours have been used.

The objective of this study was to obtain natural pigments from different plant sources and study the stability of the pigments with various factors. Various types of solvents were used in the extract processes, such as ethanol, petroleum ether, hexane, HCl, acetic acid, citric acid and ascorbic acid etc.

In yellow pigment extraction methods, turmeric extraction with 95% ethanol gave the high intensity of yellow and which had the most stability. In the green pigment extraction, Centella, ethanol extract gave the high chlorophyll extraction yield than Spinach ethanol extraction.

In the red pigment extraction, betanin in beetroot gave the high extraction yields in 20% ethanol and 0.5% citric acid extract and 0.1% ascorbic acid and 0.2% citric acid extract. These two extracts gave the betanin yield respectively 22.120 mg/kg and 28.324 mg/kg. Betanin extract obtained from ascorbic acid and citric acid combination showed better stability than ethanol citric acid combination.

In the violet pigment extraction, Anthocyanin present in grape peel has a better extraction possibility in dilute acidic aqueous media. 99.7% acetic acid and 1% HCl gave the higher anthocyanin yield. The anthocyanin amount of extracts was respectively 13.39 mg/100g

and 12.397 mg/100g. Anthocyanin pigment extracted from both methods showed a long stability period (more than four months).