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A summary of research
work on the preparation

RESEARCH CORPORATION OF THAILAND

RESEARCH PROGRAMME NO. 29
INDUSTRIAL UTILIZATION OF COCONUTS

SUPPLEMENT TO REPORT NO. 5
A SUMMARY OF RESEARCH WORK ON THE PREPARATION AND
UTILIZATION OF COCONUT MILK AND OTHER COCONUT PRODUCTS FROM
DECEMBER 1969 TO FEBRUARY 1971

BY
UBOLSRI CHEOSAKUL
PIVAN VARANGOON
DUANGDUEN INTHORN

RESEARCH PROJECT NO. 29/1
PREPARATION OF A STABILIZED COCONUT MILK

BIOTECHNOLOGY GROUP
TECHNOLOGICAL RESEARCH INSTITUTE

ASRCT, BANGKOK 1971
not for publication

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FOREWORD

This supplement to Report No. 5 contains a summary of the research work which has been undertaken on the preparation and the utilization of the coconut milk and other coconut products from December 1969 to February 1971. It has been prepared on the occasion of the visit to ASRCT of the Consultants to the Administrator of the UNDP on a Fact-Finding Mission to determine the possible scope and nature of assistance to the Asian Coconut Community.

A SUMMARY OF RESEARCH ON THE PREPARATION AND UTILIZATION OF
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TO FEBRUARY 1971

by #
Ubolsri Cheosakul, Pivan Varangoon and Duangduen Inthorn

I. PREPARATION OF A STABILIZED COCONUT MILK

1. Production of a stabilized coconut milk in plastic bag

The production of 30 litres of grade B-B' stabilized coconut milk kept in plastic bags of 200 ml each was carried out once a week for eight months in 1969-1970 to explore the market reaction.

The stabilized coconut milk produced as described in Report No. 5, homogenized and filled while hot (about 80 C) into plastic bags previously heated to 70 C for at least one hour. The bags were sealed, treated with steam at 100 C for 15 minutes and then labelled. The milk can be stored at room temperature (25-32 C) without deterioration for 3 months. The product kept at room temperature (25-32 C) was offered for sale at 2.00 baht per bag. All of the product was sold out in a short time and the supply could not meet the demand.

Plastic bags which stand heat treatment at a temperature of 100 C are available locally. They were sent to the Food and Drug Division, Department of Hygiene, Ministry of Public Health for certification of their use as food containers.

Bio-Technology Group, Technological Research Institute, ASRCT.

2. Canning of a stabilized coconut milk

The stabilized coconut milk of grade B-B' was produced as described in Report No. 5, homogenized and canned in the following manner:

Internally 613 lacquered and externally plain cans, size 307 X 113, which were supplied by the Metal Box Co. in Bangkok, were heated in steam at 100 C for at least 3 hours, filled with the stabilized coconut milk, then sealed and heated with steam at 100 C for one hour.

Approximately 1000 cans of stabilized coconut milk were produced in the laboratory at the end of 1970 for the physical appearance and stability studies.

3. Canning of a concentrated coconut milk

A canned concentrated coconut milk with unique characteristics contains approximately 60 % of water was successfully prepared. The concentrated coconut milk is better than grade B-B' coconut milk in having the following properties:

1. white, smooth like cream
2. pleasant flavour and coconut odour
3. very sweet taste
4. readily dispersed in water
5. very slowly separates into two layers after mixing with water
6. no recurring precipitation at high temperature
7. small volume, one can of concentrated coconut milk (150 gm) representing approximately one-and-a-half coconut fruits.
8. completely aseptic product
9. useful for many other preparations

The shelf-life and the acceptability of this product are under investigation.

II. UTILIZATION OF COCONUT MILK AND OTHER COCONUT PRODUCTS

1. The use of coconut milk in soft drink

A soft drink containing dilute coconut milk, stabilizer, emulsifier and flavouring agent was prepared. Its stability and acceptability are being studied.

2. Sauces

Various kinds of promising sauces were prepared by hydrolyzing with acid a mixture of soy bean or mung bean residue, coconut residue, coconut testa and wheat flour in varying proportions. The compositions of these sauces and their acceptance by consumers are under investigation.

3. High protein cooky

A highly acceptable cooky with pleasant flavour and good appearance was produced in the laboratory. It is made of cooked soy bean, coconut milk, fat, egg, sugar and flavouring agents. The cooky contains 25% of protein and carries about 540 calories per 100 gm.

Pilot-scale production of this cooky is contemplated in the near future.

4. Banana soy weaning food

A smooth, semi-liquid, weaning food having banana flavour was developed in the laboratory. It is prepared from cooked soy bean, coconut milk, syrup and banana. The proximate composition of the product is being determined.

Arrangement has been made with Rama Thibodhi Hospital for nutritional and feeding studies on this product.

5. Sweet soy weaning food

A smooth, semi-liquid, weaning food with pleasant flavour was prepared in the laboratory. It is made of cooked soy bean, coconut milk, syrup and flavouring agents.

The work on this product is at the same stage as that on Banana soy weaning food.

6. Spread

A protein paste having similar flavour and appearance to those of liver paste was developed in the laboratory. It is made of cooked soy bean, coconut milk, fat, spices and flavouring agents. The composition and consumer test are under study.

7. Coconut honey

A smooth, thick liquid with pleasant coconut flavour and odour was produced in the laboratory. It is made of coconut milk, syrup and emulsifier. Further investigation is required.

8. Development of village scale beverage, Coco-soya milk

Coco-soya milk is a beverage of high caloric value composed of coconut milk and soy bean. It can be prepared for small groups of children by simply blending dehulled boiled beans and coconut milk in the first formula and blending soy bean extract with coconut milk in the second formula.

The beverage can be produced at home or community level in the villages and involves minimum technical equipment. The concept was proposed by UNICEF.

The product provides about 6 gm of protein in every 200 gm serving. Calculated from their compositions, 200 gm of formula I beverage provides 160 calories, whereas the same amount of Formula II gives 132 calories.

They were well accepted by children at two hospitals and one orphanage.

9. Development of soy beverages

Various palatable soy beverages were prepared from soy bean extract using a technique which reduces the objectional soy flavour. The milk was then formulated in different flavours such as coconut milk, butter, chocolate, etc. It is a nutritious and acceptable drink for adults and children.

The beverages contain about 3% protein and 1.2-1.6% fat. Each 100 gm carries 57-65 calories.

10. Coco-soya paste

A protein product which is designed for spoon feeding children. It is made of coconut milk and soy bean, and flavoured with fresh banana.

The paste has an attractive flavour, containing 7% protein.

11. Coco-mung bean paste

A smooth paste with pleasant coconut flavour was prepared from coconut milk, cooked dehulled mung bean and sugar. The product can be directly spoon-fed to children or mixed with an equal volume of warm water for the use as a drink.