

Extraction and purification of gel forming substances of *Cyclea burmanni* (kesi pissan) and study of its use for the production of fruit yoghurt and jelly

W N P K Jayasundara* and P L N Lakshman*

*Department of agricultural chemistry, Faculty of agriculture, University of Ruhuna

Abstract

Cyclea burmanni, (kesi pissan) has a unique expectorant property. The jelly produced out of crushed fresh leaves has some obnoxious color properties and therefore, it is not popular. The study aims to formulate a commercially acceptable herbal jelly out of *Cyclea* leaves. Mature unripe *Cyclea* leaves were put under sun for two days and ground. Then it stored in refrigerated condition for the later usages. For the purification 4 methods were tested to select best one. Color, odor, texture and overall appearance show no significant differences between commercial jelly and *Cyclea* jelly. The overall quality of *Cyclea burmanni* jelly is acceptable as commercially graded jelly crystal.

Introduction

There is a plant called *Cyclea burmanni*, (kesi pissan) has a unique expectorant property. Fresh crushed leaves of *Cyclea* are mixed with water, filtered and kept overnight to prepare a jelly. This has some obnoxious colour properties and as a result of it, this gel is not popular among people. Therefore this study is mainly planned for the production of an herbal gel for commercial purposes. Preparation of dry powder from leafy material of *Cyclea* and studying of its gelling properties, development of a method for the purification of the gel, study of its application for the production of fruit yoghurt jelly are the major areas of study. Prepared jells of different methods were tested for color, texture, odor and appearance by a sensory panel.

Materials and method

Mature unripe *Cyclea* leaves were put under sun for two days and ground. Then it stored in refrigerated condition for the later usages. For the purification 4 methods were tested to select best one. They were sun drying of leaves, CaCl₂ treatment, oven drying, and centrifugation. The leaf powder was suspended in water and filtered by using linen cloth. This suspension was used to centrifuge. 1200 rpm was used for changing time.(8 min,10 min etc.)

The dried leaf powder (1g) was suspended in 40 ml of water and shake well to mix. Then the solution was filtered by using linen cloth and left 30 min-1 hour at 4°C. the formation of gels and their quality was assessed by visual inspection. Series of jelly was prepared by varying concentrations (3.3%, 2%, 2.5%) and compared with commercial jelly. Sensory panel was used to evaluate color, texture, odor appearance and overall acceptability of products. Results were analyzed by using Kruskal-Wallis one way nonparametric test using statistics analysis package. Study revealed that there were no significant differences between commercially available jelly and Cyclea jelly of color, texture and odor. However, there is a significant difference of appearance between commercially available jelly and Cyclea jelly. No significant difference of overall quality between commercially available jelly and Cyclea jelly.

Result and discussion

The minimum concentration of *Cyclea burmanni* leaf powder that was required to form a firm gel was 2.5%. at low concentration of leaf powder, small gel particles were suspended in bulk liquid. As the concentration increased, the size of the gelled masses increased until at about 1.66%, a continuous firm gelled mass was observed. Increasing the concentration of leaf powder resulted in increased the firmness of the gels.

The gels formed by the leaf powder at room temperature were nearly as firm as those at 4°C. The sun drying of leaves was successful method of purification by removing considerable amount chlorophyll. It is also help to increase the shelf life of the material. CaCl₂ treatment was not succeeded. As this plant is non climetric plant, oven drying of leaves also not succeeded. The reason is the gel from the oven dried leaf powder gas brown in color. Centrifugation method is also one of most suitable method for purification of *Cyclia* leaf powder. But 1200 rpm was not enough for proper purification. According to available references at least 6000 rpm for 30 minutes require to clean purification.

Properties of color, odor, and texture show no significant differences between commercial jelly and Cyclea jelly. Appearance of jelly shows a significant difference between commercial jelly and Cyclea jelly.

Overall quality of the jelly products with above treatment there is no significant differences from the product one another. According to the results the overall best quality product as same as commercially graded jelly.

Conclusion

Sun drying of the leaves of *Cyclea burmanni* is the most successful purification method among practiced purification methods except centrifugation method. At least 6000 round per minute 30 minute condition

require to get successful results. The minimum concentration of *Cyclea burmanni* leaf powder that was required to form a firm gel was 2.5%.

The gel formed by the *Cyclea burmanni* leaf powder at room temperature was nearly as firm as those refrigerated temperature. When the temperature is increasing, the firmness of gel formation is decreased. When considering the texture, odor and taste of jelly and fruit yogurt (from *Cyclea*), acceptability is as same as commercially graded jelly and fruit yogurt. But the acceptability of appearance of *Cyclea* jelly and fruit yogurt is considerably lower than commercially graded jelly and fruit yogurt. By improving the purification method (centrifugation method) we can avoid these problems.

The overall quality of *Cyclea burmanni* jelly is acceptable as commercially graded jelly crystal. On the other hand the overall quality of *Cyclea burmanni* fruit yogurt lowers than the commercially graded fruit yogurt.

References

Allied Chemical Production. 1966. *Jellies & Preserves*. New York: USA.

Bernard W.M. 1989. *Chocolate, cocoa, and confectionary*. New Delhi; CBS Publishers & Distributors.

PROGRAM

- 09.10 am Welcome address by **Dr. Mangala De Zoysa**, Head, Agricultural Economics
- 09.15 am Address by **Prof. K D N Weerasinghe**, Dean, Faculty of Agriculture
- 09.20 am Address by **Prof. Ranjith Senaratne**, Vice Chancellor, University of Ruhuna
- 09.30 am Inaugural address by the Chief Guest, **Prof. M C N Jayasooriya**, Executive Director, National Science Foundation (NSF) and Executive Director, NASTEC
- 09.50 am Special Address by the Guest of Honor, **Dr. Terence Abeysekara**, Senior Economist, World Bank Mission, Sri Lanka
- 10.30 am Vote of Thanks, **Dr. L.M. Abeywickrama**, Coordinator of the Session

Panel of Judges for Technical Sessions

Mr. T A Wimalasena, Provincial Director, Dept. of Agriculture
Dr. H L Obeysekara, Director, SLIATE,
Dr. Sujatha Weerasinghe, Senior Research Officer, Dept. of Agriculture

| Technical Sessions | | Chaired By |
|--------------------|--|--------------------------|
| 11.00 am | I. Crop Science (3) | Prof S Subasinghe |
| 11.45 am | II. Agric Economics (3) | Prof. Mahinda Wijeratne |
| 12.30 pm | Lunch | |
| 13.15 pm | III. Animal Science (3) | Prof (Mrs) R T Serasinhe |
| 14.00 pm | IV. Agric. Engineering (3) | Prof. K D N Weerasinghe |
| 14.45 pm | V. Agric. Biology (2) | Dr. R W K Punchihewa |
| 15.15 pm | IV. Agric. Chemistry (2) | Dr. S D Wanniarachchi |
| 15.45 pm | Tea, Summing up and presentation of awards | |

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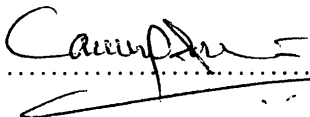
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