THE CHARACTERISTIC STUDY OF GREEN GRASS JELLY EXTRACTED THROUGH WET METHOD AND THE ADDITION OF SUJI LEAF

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Green grass jelly is made from crude extraction of galacturonic acid from *Cyclea barbata* leaf. In this experiment, wet method in room temperature of extraction was performed. A small number of chlorophyll also extracted simultaneously, so that appearance of green grass jelly shows a tinny green Chlorophyl may contribute to green color appearance as well as to functional constituent as natural antioxidant. In order to increase green appearance of green grass jelly, in this experiment, also crude chlorophyll extraction of suji leaf was added in percentage of 0% (v/v), 5% (v/v), 10%(v/v), and 15%(v/v) respectively. Viscosity an color of green grass jelly was determined as well as organoleptic test was performed. The results showed that there was no effect of suji leaf chlorophyll on the viscosity of green grass jelly. Because of adding the suji leaf chlorophyll, the green appearance increase dramatically so that panelists judged and gave a score of like to very like. However, there were no score differences between percentage treatments of 10% (v/v) and of 15% (v/v).

Keywords: Green grass jelly, *Cyclea barbata* leaf, chlorophyll, suji leaf

Introduction

The benefits of dietary fiber for health is now widely known in terms of reducing the rate of glucose absorption and decreasing post-prandial plasma glucose concentrations (Spiller, 1993) by increasing the apparent thickness of the intestinal unstirred layer and slowing down gastric emptying and the intestinal absorption of glucose (Meyer *et al.*, 1988). Soluble dietary fiber is also added to improve functional properties of food products. However, this improvement depends on the composition of polysaccharides contained in the dietary fiber.

Green cincau is a plant common and widely known by Indonesians. Green cincau is found in many parts of Southeast Asia, yet its scientific name is still unclear. Most botanists classify it under the name of *Cyclea barbata* Miers, but others call it as *Cissampelos parreira*

(Chuaku and Soonthornchareonnon, 1997: Bunyapraphatsara, 1996: Udomrit, 1997: Nasution, 1999). Green cincau is low on calories, as well rich on bioactive compounds. Consequently, green cincau is a potent medicine for curing a number of diseases.

Some studies had shown that pectin is the main substance in gelation process of green cincau leaf extract (Udomrit, 1997: Nasution, 1999). However, green cincau crude gel is different from other pectic gels because it can form at cold temperature and room temperature without the need for any other ingredients like sugars. The gel formed is irreversible, yet also prone to syneresis (Khamphui, 1990). However, the gel extracted from the green cincau leaf shows great potential for use as an ingredient in therapeutic diets, such as in food gels for patients with diabetes mellitus, as well as in the food industry, where it could function as a food thickener and stabilizer.

The gel processed from green cincau leaf extract is green, showing that chlorophyll exists in the extract. There is a report that shown phenolic compounds in green cincau extract (Zakaria *et al.,* 2001) potential as anticancer and antioxidant. This shown that green cincau leaf extract gel is biologically functional.

Chlorophyll has been used as food coloring agent, but its function as antioxidant and anticancer compound has been generally understood in recent times. Chlorophyll is also reported able to lessen inflammation (Okai and Okai, 1997). It is abundantly available in green plants and relatively easy to extract.

Suji leaf (*Pleomele angustifolla* N.E. Brown) is widely known in Indonesia as green coloring additive. It is found in South and Southeast Asia and easily grown in such geographical areas. Suji leaf extract is rich on chlorophyll, making it safely consumed. Its mild flavor makes suji leaf extract a very good non-artificial food additive, since it does not change food's flavor and odor significantly (Rufaida, 2008). In order to boost acceptability of chlorophyll and suji leaf extract, those derivative products has to be improved. One of these potential products is fortifying green cincau's dietary fiber with extra chlorophyll from suji extract.

Method of Research

Extraction of Green Grass Jelly

Leaf of green grass was added with tap water (1:8, w/w) then blended (500 RPM for 3 minutes). Using bloth, whey part of green grass leaf was separated from fiber part. Whey part of green grass leaf should be polymeric of glucuronic acid, namely pectin.

Extraction of Suji Leaf

Leaf of suji was added with tap water (1:2, w/w) then blended (500 RPM for 3 minutes). Using bloth, whey part of suji leaf was then separated from fiber part. Predominantly, whey part of suji leaf should be chlorophyll.

Making of Green Grass Jelly with Additional Extract of suji leaf

Whey of green grass obtained from the extraction was then added with whey of suji leaf obtained from the extraction (0%, v/v; 5%, v/v; 10%, v/v: and 15%, v/v). Mixture of green grass whey and suji leaf whey was then homogenized using blender (500 RPM for 1 minute). The mixture of the whey was then kept in temperature of 5°C for 12 hours and the whey mixture become hard in the form of jelly-like. Viscosity and color of green grass jelly was determined as well as organoleptic test was performed

Result and Discussion

There were no significant differences of green grass jelly viscocity among treatmens, The fact that there was no contribution of extracted suji leaf chloropyl to viscocity of green grass jelly even the addition of as high as 15% extracted suji leaf chlorophyll.

There were significant differences of lightness among treatments. The higher the amount of suji leaf extract the lower the lightness of green grass jelly (Table 1).

Table 1: The Effect Suji Leaf Extract on Lightness of Green Grass jelly

SLE[a] (%)	LIGHTNESS LSMEANS	p>t comparison of all means 1	2	3	4
0	36.5	—	0,0001	0,0001	0,0001
5	34.6		—	0,0001	0,0001
10	30.0			—	0,0001
15	29.5				—

[a]SLE= Suji Leaf Extract

Also, there were significant differences of chroma among treatments. The higher the amount of suji leaf extract the lower the chroma of green grass jelly (Table 2). There were also significant differences of hue among treatments. The higher the amount of suji leaf extract the higher the hue of green grass jelly (Table 3).

Table 2: The Effect Suji Leaf Extract on Chroma of Greean Grass Jelly

SLE[a] (%)	CHROMA LSMEANS	p>t comparison of all means			
		1	2	3	4
0	19.9	—	0,0001	0,0001	0,0001
5	10.1		—	0,0001	0,0001
10	8.8			—	0,0001
15	7.8				—

[a]SLE= Suji Leaf Extract

Table 3: The Effect Suji Leaf Extract on Hue of greean Grass Jelly

SLE[a] (%)	HUE LSMEANS	p>t comparison of all means			
		1	2	3	4
0	116.4	—	0,0001	0,0001	0,0001
5	119.0		—	0,0001	0,0001
10	123.1			—	0,0001
15	124.5				—

[a]SLE= Suji Leaf Extract

Addition of the suji leaf chlorophyll, the green appearance increased dramatically so that panelists judged and gave a score of like to very like. However, there were no score differences between percentage treatments of 10% (v/v) and of 15% (v/v) (Table 4).

Table 4: Extended Hedonic Test of Appearance of Green Grass Jelly

ADDITION OF SUJI LEAF EXTRACT (%)	RANKS	X = 18.27
0	58.5	A
5	77.0	B
10	96.5	C
15	98.5	C

Summary

The results showed that there was no effect of suji leaf chlorophyll on the viscosity of green grass jelly. The higher the percentage of suji leaf extract the lower the lightness and chroma of green grass jelly. Conversely, the higher the percentage of suji leaf extract the higher the hue of green grass jelly Because of adding the suji leaf chlorophyll, the green appearance increase dramatically so that panelists judged and gave a score of like to very like. However, there were no score differences between percentage treatments of 10% (v/v) and of 15% (v/v).

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