

FORUM IPIMA 2013

Ikatan Profesor Indonesia-Malaysia

Bojor, Indonesia 18-20 November 2013

A-15

MULBERRY BASED DIVERSIFICATION PRODUCT AT SUKAMANTRI, IPB SILKWORM TEACHING FARM (TFSA)

Clara M. Kusharto¹, F.X. Koesharto², Nunung Cipta Dainy², Risti Rosmiati²

¹ Departement of Community Nutrition, Faculty of Human Ecology IPB, email :
kcl_51@yahoo.co.id

² Teaching Farm Sutera Alam IPB

SUMMARY

Mulberry leafs are the main feed for silkworm larva during their growth. Damayanti *et.al* (2008) observed that fresh mulberry leafs contain *theaflavin*, *tannin* and *cafein* which are specific chemical substances found also in tea leafs (*Camellia sinensis*). Sofian (2006) found that mulberry leafs contain *deoxynojirimycin* (DNJ) a chemical substance which could cure diabetes mellitus. In general the objective of this study is exploring the opportunity to diverse the classic silkworm farm and could produce mulberry tea as functionally medical herb drink and the bright green chlorophyll powder which is derived from acetone dissolvance. With these additional products it could elevated the usefulness of mulberry leafs and finally additional income of silkworm farm and their farmer.

The study showed that selected mulberry leafs has a ratio of green tea production of 65 : 35 which has a *fenol* content of 730 mg/g db and antioxidant activity 584mg/100g AEAC. F4 formula is fulfilled the SNI standar for black tea. Hence, it is regarded as satisfactory mulberry tea. Mulberry chlorophyll is produced by acetone extraction and has a green color, brighter than using ethanol solvent (Rosmiati, 2011). The powder are delicate but still hygroscopic. Selected chlorophyll powder derived from Cu is powder with additional inert substances of 3%. Its analytically chemical physic is water content of 7.58%, dissolve within 98.30%, total Cu 0.43ms/g and Cu chlorophyllin 0.23 mg/g, antioxidant activity 19.74%, which were lower as compare to using ethanol as solvent of Cu. However residue analysis of solvent showed that solvent was not detected at the end of processing.

INTRODUCTION

The condition of teaching Farm Sutera Alam (TFSA) is similar to other silkworm farms in Indonesia are unable to compete with other farm which produce imported products thereby no regular income for the institution as well as its farmer. Product diversification based mulberry leaves may be a solution to increase farmers' income. Eight (8) ha area of mulberry plantation is owned by the TFSA-IPB mostly planted of varieties *Multicaulis* and *M. alba*. For development mulberry plantation in TFSA quite large, also need to be planted in appropriate land elevation (> 600dpt) to plant mulberry. The chemical analysis of the flavins, tannins, and caffeine (Damayanti *et.al* 2008).

Proceedings



FORUM IPIMA 2013

Ikatan Profesor Indonesia-Malaysia

Bogor, Indonesia 18-20 November 2013

become one of the strength of mulberry leaves as a health drink. Research was aims to diversified the production of mulberry based, there is : production of mulberry tea as functional herbal drink and production of green powder of chlorophyll using acetone soivent.

MATERIALS AND METHODS

The mulberry leaves are processed by oxidized enzymatic method as followed : withering, grinding and enzymatic oxidation reactions, drying. The method of manufacture mulberry leaf chlorophyll powder can be seen in Figure 1.

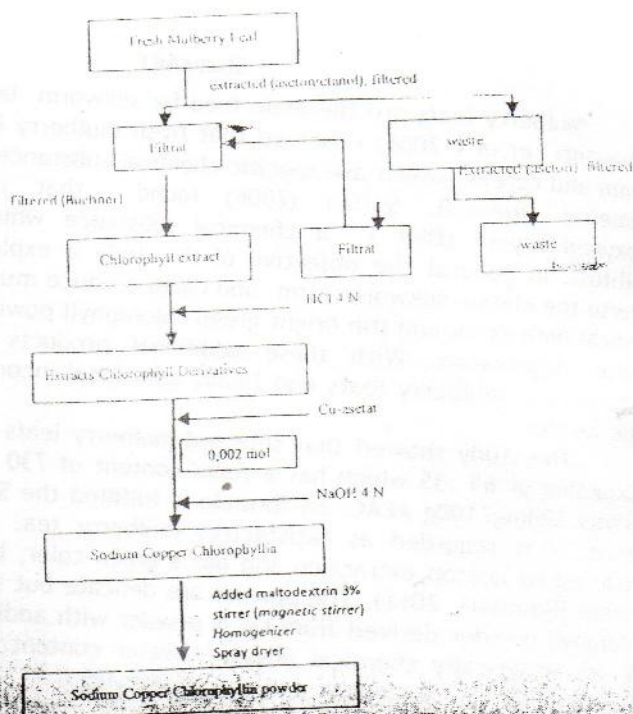


Figure 1. Flowchart of manufacturing mulberry leaves chlorophyll powder (modified from Kandiana (2010); Nordin (2009))

MAJOR FINDINGS

Table 1. Result analysis of quality mulberry tea to SNI standards

Variable of analysis	Value	SNI
	7.55	maximum 8.00
	48.10	Minimum 32.00
	7.66	minimum 4.00- maximum 8.00
	91.76	Minimum 49.00

Tea, No. 01-3945-1995

Tabel 2 The result of Cu-Chlorophyllin powder physico-chemical analysis

Characteristics	Aceton Solvent	Etanol Solvent ^a
Moisture	7,58%	3,71%
Solubility	98,39%	97,31%
pH	4,52	7,46
Total Cu content	0,43 mg/g	2,85 mg/g
Cu- Chlorophyllin content	0,23 mg/g	31,14 mg/g

Source: ^a Rosmiati (2011)**CONCLUSIONS AND IMPLICATIONS**

The research are able to search the formula of mulberry tea with quality according to black tea SNI standard with the composition ratio of mulberry tea and green tea for 65 : 35, and total content of phenol of 730 mg/g and activity of antioxidant of 586 AEAC. Selected chloropyll powder derived from Cu is powder with additional inert substances of 3%. Its analytically chemical physic is Cu-chloropylin 0.23 mg/g, and antioxidant activity 19.74%. However, residue analysis showed that solvent was not detected at the end of processing.

REFERENCES

- Damayanthi, E., Clara M.K, R. Suprihatini, D. Rohdiana. 2008. Studi Kandungan Katekin dan Turunannya Sebagai Antioksidan Alami serta Karakteristik Organoleptik Produk The Murbei dan The Camelia-Murbei. Media Gizi dan Keluarga, Juli 2008 Vol. 32 No. 1.
- Kandiana M. 2010. Uji toksisitas bubuk ekstrak kompleks Cu-turunan klorofil (Na-Cu-Klorofilin) daun cincau hijau (*Premna oblongifolia* Merr.) sebagai bahan baku suplemen makanan [tesis]. Bogor: Sekolah Pascasarjana, Institut Pertanian Bogor.
- Nurdin. 2009. Pembuatan Bubuk ekstrak Cu-turunan klorofil daun cincau (*Premna oblongifolia* Merr.) dan uji praklinis untuk pencegahan aterosklerosis [disertasi]. Bogor: Sekolah Pascasarjana, Institut Pertanian Bogor.
- Rosmiati R. 2011. Karakteristik Fisiko Kimia dan Uji Toksisitas Bubuk Cu-turunan Klorofil (Cu-chloropylin) Daun Murbei (*Morus alba* L.) sebagai Prototype Bahan Suplemen Makanan. [skripsi]. Departemen Gizi Masyarakat FEMA JPB Bogor.
- SNI. 1995. SNI of Green tea No. 01-3945-1995. http://www.bsn.go.id/sni/sni_detail.php?sni_i
- Sofian T. 2005. Senyawa DNJ, Calon Obat Diabetes dari Murbei. Berita iptek. <http://www.beritaiptek.com/zberita-beritaiptek-2005-04-11-senyawa-DNJ-Calon-Obat-Diabetes-dari-Murbei.shtml> Senin, 11 April 2006 11:03:49.