JURNAL IPTEKS TERAPAN
Research of Applied Science and Education V15.i2 (105-111)

ISSN : 1979-9292

E-ISSN : 2460-5611

PUDING WUNGU (*Graptophyllum pictum* (L.) Griff) LEAVES SIMPLICIA STANDARDIZATION

Desi Sagita[1)], Barmi Hartesi[2)], Yuli Fitri Utami[3)]
[1]Fakultas Ilmu Kesehatan Prodi Farmasi Universitas Adiwangsa Jambi
[2,3]Prodi Farmasi, STIKES Harapan Ibu Jambi, Indonesia
email: daisyfarmasi@gmail.com, barmi.hartesi@gmail.com, yulifitriutami98@gmail.com

Abstract

Puding wungu leaves Graptophyllum pictum (L.) Griff have potential activity for laxative, diuretic, antiinflammation and antibacterial. Those Puding wungu leaves potential to be developed as an active ingredient in pharmaceutical products. This study aims to standardize the simplicia of puding wungu. Thes standardization methods include macroscopic, microscopic test, determination of chemical content, water-soluble and ethanol-soluble content,total ash content, acid-insoluble ash content, water content, and dry shrinkage. The method for standardization refers to Harborne methods and general standard method in Ministry of Health of republic Indonesia books. Puding wungu leaves have an oval shape, the edge of leaf is regular, distinctive odor, a brownish-purpe color, pinnate leaf, shiny surface, the tip and base of the leaf is tapered. Puding wungu leaves contain tannin, flavonoids, steroids, alkaloids and phenollic compounds. Water soluble content of 34.54%, ethanol soluble content 13.07% ± 0.02; ash content 7.06% ± 0.01; acid insoluble ash content 1.77% ± 0.02; water content 0.21% ±0.05, and drying loss 2.90% ± 0.17. All standardization parameters meet the requirement of raw material from Pharmacopeae herbal Indonesia, Materia medica or standard set by the government.

Key words: *Puding Wungu Leaves (Graptophyllum pictum (L.) Griff), specific parameters, non specific parameters.*

INTRODUCTION

Puding Wungu plants (*Graptophylum pictum* (L.) Griff) are often found growing wild in rural areas or grown as an ornamental or medicinal plant. Puding Wungu leaves are used as diuretic, laxative, emollient, reduced swelling, inflammation, antibacterial (inhibit adhesion of *Porphyromonas gingivalis* in periodontal disease) [1], [2]. This plant contains chemical compounds such as flavonoids, saponins, tannins, steroids and triterpenoids [3], [4].

The standardization process is required to ensure the quality of herbal raw materials and pharmacological effects of plants in each production. The first stage in the development of herbal medicine is the standardization process. The raw material of herbal medicine should be standardized. Standardization aims to evaluate the quality and safety of drugs. There are two parameters that are determined in the standardization process, namely general parameters and specific parameters. General parameters are a

Submitted : 01 Januari 2021 – Accepted : 29 March 2021 – Published : 01 Juni 2021

JURNAL IPTEKS TERAPAN
Research of Applied Science and Education V15.i2 (105-111)

ISSN : 1979-9292

E-ISSN : 2460-5611

series of standard that focus on material stability and safety, while specific parameters are a series of standard that focus on chemical compounds responsible for pharmacological effect directly [5]. general parameters include water content, ash content, insoluble acid ash, dry shrinkage. Spesific parameters include macroscopic an microscopic, phytochemical screening, water and ethanol soluble content [5].

METHOD

The simplicia that used in this studi are the leaves of Puding wungu *(Graptophyllum pictum* (L.) Griff) derived from Merangin district, Jambi Province and futher identified at ndalas University Herbarium. Leaves were collected, washed and dried by aerated protected from the sun. then samples were blended into powder form and sieved using 60 mesh sieve [5].

Standardization of Spesific Parameters

Macroscopic characterizations of Puding wungu

Observing the physical form of fresh leaves Puding Wungu include shape of leaf, bone of leaf, the back surface of the leaf, the tip of leaf, the base of leaf, the edges of leaf, the color of leaf, the smell and taste of leaf [5].

Microscopic characterizations of Puding wungu

Observing anatomical form and fragment of Puding wungu leaves under electic microscopic (Yazumi®) with magnifications of 10x [5]

Phytochemical test

Phytochemical test was carried out on secondary metabolite includes alkaloid, flavonoid, steroid, saponin and tannin. Phytochemical test was carried out following the procedures reported in literature [6].

Determination of water soluble content

Puding wungu leaves simplicia about 5 grams were macerated with 100 mL of saturated chloroform water. The extract was shaken in the first six hours and allowed to stand for the next 18 hours. The solution was filtered and the filtrate about 20 mL was evaporated and dried at 105 °C until a constant weight was obtained. Water soluble content was calculated in percent [5]

Determination of ethanol soluble content.

Puding wungu leaves simplicia about 5 grams were macerated with 100 mL ethanol 96%. The extract was shaken in the first six hours and allowed to stand for the next 18 hours. The solution was filtered and a total of 20 mL of filtrate was evaporated and dried at 105 °C until a constant weight was obtained. Ethanol soluble content was calculated in percent [5].

Standardization of Non-Spesific Parameters

Submitted : 01 Januari 2021 – Accepted : 29 March 2021 – Published : 01 Juni 2021

JURNAL IPTEKS TERAPAN
Research of Applied Science and Education V15.i2 (105-111)

ISSN : 1979-9292

E-ISSN : 2460-5611

Determination of total ash

Puding wungu leaves simplicia about 2 grams were put into silicate crucible that had been calibrated and burnt in a furnace at 600 ± 25 °C for 5 hours. The residual ash was cooled and weighed. Total ash was calculated toward material that has been dried in air is not more than 12% [5].

Determination of acid insoluble ash.

The ash obtained from determination of total ash, was boiled with 25 mL of dilute HCl for 5 minutes. The acid insoluble part was collected, filtered and washed with hot water. Then the residual ash was burnt in a furnace at 600 ± 25 °C until a constant weight was obtained. The total acid-insoluble ash is not more than 2% [5].

Determination of water content

Puding wungu leaves simplicia about 2 grams were put into a dry flask and weighed. Dry at 105 °C for 5 hours and weigh. Continue drying and weighing at 1 hour intervals until the difference between 2 consecutive weights is not more than 0.25% [5].

Dry shrinkage determination

Puding wungu leaves simplicia about 1 grams were put into silicate crucible that had been warmed at 105 °C for 30 minutes and calibrated. The simplicia powder in the crucible is flattened by shaking the crucible, until it is a layer of thickness approximately 5 mm to 10 mm, put in to the oven and dried at 105 ºC for 30 minutes until the constant weight was obtained [5].

RESULT AND DISCUSS

Puding wungu leaves have the potential activity as a laxative, diuretic, antiinflammation, antioxidant and antibacterial [7][3]. Those Puding wungu leaves potential to be developed as an active ingredient in pharmaceutical product.. Traditionally, Puding wungu leaves can be processed into simplicia form. In order to be marketed, puding wungu leaves should be standardized. The aim of this standardization is to ensure the the same contents of the simplicia according to the predetermined standards so that the quality and safety of the simplicia are guaranteed. The standard used as a reference in the standardization process is Materia medica and Indonesian herbal pharmacopoeia. In this study, we standardize puding wungu leaves with specific parameters and non-spesific parameters.

To find out the originality of the simplicia and prevent it from forgery, it is necessary to carry out macroscopic and microscopic determination of Puding wungu leaves simplicia. The aim of macroscopic identification is to recognize with physical characteristic of the Puding wungu leaf. The result show that Puding wungu leaf has an oval shape, the edge of leaf is regular, distinctive odor, a brownish-purpe color, pinnate leaf, shiny surface, the tip and base of the leaf is

Submitted : 01 Januari 2021 – Accepted : 29 March 2021 – Published : 01 Juni 2021

JURNAL IPTEKS TERAPAN
Research of Applied Science and Education V15.i2 (105-111)

ISSN : 1979-9292

E-ISSN : 2460-5611

tapered. The microscopic observations on the cross-section of leaf were shown in figure 1

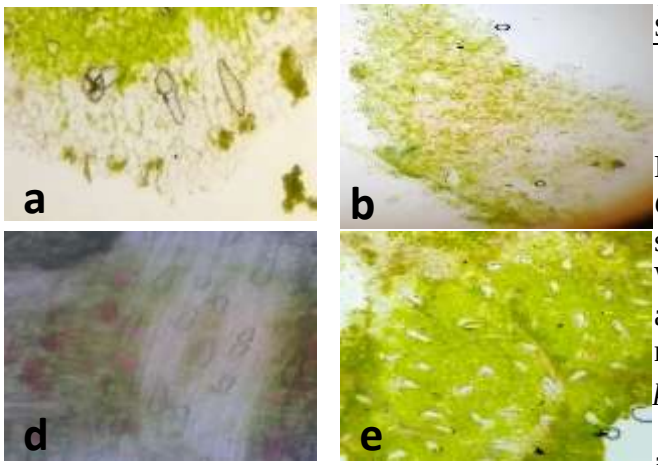

Figure 1. Microscopic observation od Puding wungu leaf (a. epidermis cell wal, b. stomata, c. collenchyma d. vascular bundle e. lithocysts cell)

Phytochemical screening aims to know the chemical compounds found in simplicia of Wungu pudding leaves. Some of the chemical compounds that can be derived from plants are flavonoids, steroids, alkaloids and phenollic compounds. The results of phytochemical screening from Puding wungu leaf simplicia are shown in table 1.

Table 1. The chemical compound found in the simplicia of Puding wungu leaves

Chemical constituent	Color changes	conc
Alkaloids Mayer	White precipitate	+
Alkaloid Bauchardart	Dark chocolate	+
Alkaloid dragendorf	Yellow precipitate	+
Flavonoid (Mg+HCl)	orange	+
Saponin	foam	+
Tanin (FeCL3)	Dark green	+
Tanin (gelatin)	White precipitate	
St		+

N.L and Ariati, N ethanol extract of *G* ..Griff contained saponin, flvonoid, phenolic and steroid [3]. While another researcher found alkaloid and flavonoid was found in ethanol and methanol extract of *Graptophyllum pictum*[8]

The other specific paramaters tested are soluble content simplicia in solvent i.e water dan ethanol solvent. Both of these solvents are safe and allowed for pharmaceutical process. This tested aim to provide an initial description of the amount of active compound to be extracted due to polarity of solvent [5]. Water solvent dissolve polar compounds, while ethanol dissolve less polar compounds. From the result showed that water-soluble and ethanol soluble content were 34.54% and 13.07%, respectively. Levels of water soluble content are greater than ethanol soluble content, its mean there are more polar compound dissolve in water solvent. Some compounds dissolve in water include alkaloids, saponins, tannin, and other while compounds dissolve in ethanol include phenol, terpenoid, steroid [9]. Compound containing ingredients such as carbohydrates, salt, mineral and some organic compound dissolve more easily in

Submitted : 01 Januari 2021 – Accepted : 29 March 2021 – Published : 01 Juni 2021

JURNAL IPTEKS TERAPAN
Research of Applied Science and Education V15.i2 (105-111)

ISSN : 1979-9292

E-ISSN : 2460-5611

water[10]. The result of water and sethanol soluble content are shown in table 2

Table 2. The result of water and ethanol soluble content of Puding wungu leaf simplicia

Parameters	Repeat (%)			Average ±Stdev
	1	2	3	
Water soluble content	34,54	34,54	34,54	34,54%±0
Ethanol soluble content	13,05	13,10	13,06	13,07%± 0,02

Non specific parameters standardization is carried out to know the external factor during manufacture of simplicia affect the safety, quality and stability of simplicia. Non specific parameters include, water content, total ash , acid insoluble ash , dry shrinkage. The result of non specific parameter are shown in table 3.

Table 3. Non specific parameters of Puding wungu leaf simplicia.

Parameters	Repeat (%)			Average % ±Stdev	Standard (%)
	1	2	3		
Total ash	7,05	7,07	7,07	7,06±0,01	≤12
Acid insoluble ash content	1,77	1,76	1,80	1,77±0,02	≤2
Water content	0,15	0,25	0,25	0,21±0,05	≤0,25
Dry shrinkage	2,70	2,98	3,03	2,90±0,17	≤10

*Standard according to material medika 1995 , Pharmacopeae herbal indonesia

Total ash content and acid-insoluble ash content test aims to give an idea of the total amount of minerals a metal remaining after incineration [5]. Both metal and mineral derived from soil and water sucked by plant tissue [10]. The minerals derived from plant tissue or external mineral from soil and sand during processing form of simplicia. The greater amount of total ash content and acid-insoluble ash content indicates the presence of impurities simplicia from silicate soil, sand, and dust [11].

Water content test provides a minimum limit or range of the number of water content in the simplicia [5]. The greater value of water content, the easier simplicia overgrown by bacteria and fungi thereby reduce biological activity. Improper drying process causes a change in shape, appearance and quality characteristics of simplicia [12].

Drying shrinkage aims to inform the limitation and range of the amount of compounds lost during the drying process [5]. Drying process reduce amount of water in the simplicia so it can be used for a long time. The smaller value of dry shrinkage, the better the drying process and the sample is not easily overgrown with bacteria and fungi. Drying shrinkage value is not more than 10% .

CONCLUSION

The results of stardardization parameters Puding wungu leaves simplicia drom Jambi, have met the requirement of

Submitted : 01 Januari 2021 – Accepted : 29 March 2021 – Published : 01 Juni 2021

ISSN : 1979-9292
E-ISSN : 2460-5611

raw material from Pharmacopeae herbal Indonesia, Materia medica or standard set by the government.

BIBLIOGRAPHY

[1] T. L. Mardiningsih, D. Sartiami, N. Khumaida, N. N. Kristina, and C. Sukmana, "Kutu Tanaman Dan Trips Berasosiasi Dengan Tanaman Daun Ungu Dan Tingkat Kerusakan Tanaman," *Bul. Penelit. Tanam. Rempah dan Obat*, vol. 23, no. 1, pp. 70–82, 2015, doi: 10.21082/bullittro.v23n1.2012.

[2] A. Kurniawati, D. Praharani, and G. V. Handoko, "Effectiveness of Graptophyllum pictum (L.) griff leaves extract toward porphyromonas gingivalis adhesion to neutrophils," *Malaysian J. Med. Heal. Sci.*, vol. 16, no. 4, pp. 60–66, 2020.

[3] N. L. Rustini and N. K. Ariati, "Identification of Active Antioxidant Compounds from Ungu Leaf Ethanol Extract," *J. Heal. Sci. Med.*, vol. 2, no. 1, pp. 9–12, 2018.

[4] E. Elmitra and S. E. Rikomah, "Formulasi Sediaan Krim Ekstrak Etanol Daun Puding Hitam (Graptophyllum Pictum (L.) Griff)," *J. Katalisator*, vol. 3, no. 1, p. 43, 2018, doi: 10.22216/jk.v3i1.2297.

[5] Ministry of Health of republic Indonesia., "Parameter Standar Umum Ekstrak Tanaman Obat," *(Ministry of Health of republic Indonesia.*, vol. 1. pp. 10–11, 2000.

[6] J. B. Harbone, *Metode Fitokimia: Penuntun Cara Modern Menganalisis tumbuhan Institut Teknologi Bandung*. ITB, 1987.

[7] Elmitra and S. E. Rikomah, "Formulasi Sediaan Krim Ekstrak Etanol Daun Puding Hitam (Graptophyllum Pictum (L.) Griff)," *J. Katalisator*, vol. 3, no. 1, pp. 43–52, 2018, doi: 10.22216/jk.v3i1.2297.

[8] K. Poh-Yen, S. Lay-Jing, and F. Hanani, "In vitro evaluation of photoprotective potential of the different solvent extracts of Graptophyllum pictum leaves," *J. Appl. Pharm. Sci.*, vol. 8, no. 1, pp. 147–151, 2018, doi: 10.7324/JAPS.2018.8122.

[9] T. A. Z. Ricki Hardiana, Rudiyansyah, "Aktivitas antioksidan senyawa golongan fenol dari beberapa jenis tumbuhan famili Malvaceae," *J. Kim. Khatulistiwa*, vol. 1, no. 1, pp. 8–13, 2012.

[10] Zulharmitta, U. Kasypiah, and H. Rivai, "Pembuatan Dan Karakterisasi Ekstrak Kering Daun Jambu Biji (Psidium guajava L.)," *J. Farm. Higea*, vol. 4, no. 2, pp. 147–157, 2012.

[11] Sutomo, H. D. Lestari, A. Arnida, and A. Sriyono, "Simplicia and Extracts Standardization from Jualing Leaves (Micromelum minutum Wight & Arn.) from South Kalimantan," *Borneo J. Pharm.*,

Submitted : 01 Januari 2021 – Accepted : 29 March 2021 – Published : 01 Juni 2021

ISSN : 1979-9292

E-ISSN : 2460-5611

vol. 2, no. 2, pp. 55–62, 2019, doi: 10.33084/bjop.v2i2.898.

[12] S. I. Nurkhanifah, S. A. Budhiyanti, and A. Husni, "Extract Standardization in Ethyl Acetate Fraction from Sargassum Hystrix as Inhibitor of α-Amylase and αGlucosidase," *Syst. Rev. Pharm.*, vol. 11, no. 9, pp. 528–534, 2020, doi: 10.31838/srp.2020.9.78.

Submitted : 01 Januari 2021 – Accepted : 29 March 2021 – Published : 01 Juni 2021