Identification of Standard Parameter of Mindi Leaves (*Melia Azedrach* L) Based on Indonesian Herbal Pharmacopeia for Anti-cancer Herbal

Sukardiman, Devky Rivina, Lusiana Arifianti, Herra Studiawan
Department of Pharmacognosy and Phytochemistry, Faculty of Pharmacy, Universitas Airlangga, Surabaya

Keywords Standard parameter, Raw material, *Melia azedarch* L.

Abstract Mindi (*Melia azedarch* L) has a potency to be developed as anti-anticaner agent. The raw material is affected by many factors such as cultivation, post harvest and processing. Standard parameters were used to ensure safety, efficacy and quality of the product. This study identified some of standard parameters based on Indonesian Herbal Pharmacopeia that may be useful as guidelines to choose mindi leaves for anti-cancer herbal.

1 INTRODUCTION

Mindi (*Melia azedarach* L.) is a plant species belonging to the family Meliaceae, a Mahogany family (Sapindales order). It is native to Asia but is now found in parts of Northern Australia, Africa, North America, tropical South America and Southern Europe. In South America is commonly known as paraiso or paradise, and in the US as Indian lilac or white cedar. The leaves, fruits, bark and root are use in traditional and medicine. The leaves are used for in the traditional medical systems of India (Ayurvedic, Unani-Tibb), China, Japan and Taiwan as well. Leaves have been used as a natural insecticide to keep with stored food, but highly poisonous if eaten. It's used traditionally as an anthelmintic, diuretic, emmenagouge, expectorant, vermifuge, piles, as astringent, in hysteria, leprosy, and in scrofula. in Japan, have been used for vermicide, anodyne, and skin disease, while in Traditional Chinese Medicine, it is used as an anti-parasitic and antifungal agent. It has been shown to various pharmacological activities like antifungal, anti-malarial, antibacterial, hepatoprotective, anti-oxidant, anti-fertility, anthelmintic, antipyretic and cytotoxic activities (Sultana, et al., 2014). Therefore, it is necessary to standardization which can affect quality of both extract and raw material by method that have been established by Ministry of Health through Indonesia Herbal Pharmacopeia. It is a guarantee for safety, effectiveness, and especially quality of plant material obtained, raw material that will developed into phytopharmaca preparation

2 MATERIAL AND METHODS

2.1. Plant Material

In this research, the raw material were obtained from Materia Medica Batu , East Java and taken already in dried raw material.

Figure 1. Mindi Leaves (*Melia azedarach* L.)

Sukardiman, ., Rivina, D., Arifianti, L. and Studiawan, H.
Identification of Standard Parameter of Mindi Leaves (Melia azedrach L.) based on Indonesian Herbal Pharmacopeia for Anti-Cancer Herbal.
DOI: 10.5220/0009845900002406
In *Proceedings of BROMO Conference (BROMO 2018) - Symposium on Natural Product and Biodiversity*, page 1
ISBN: 978-989-758-347-6

2.2. Determination Specific and Non-specific Parameters of Dried Raw Material

Determination standart parameter was done using Ministry of Health Guidelines through Indonesian Herbal Pharmacopeia. Specific parameter of raw material and extract among others macroscopic test, macroscopic test, organoleptic, water soluble extractive, ethanol soluble extractive, and β-sitosterol assay in raw material as well while non-specific parameter encompass loss on drying, total ash content, water content, and acid-insoluble ash content.

2.3. Determination of β- sitosterol Content in Raw Material by TLC Densitometri

Used eluent Hexane-Ethyl acetate = 7:3,with anisaldehyde spray and λ 520 nm .

3 RESULT AND DISCUSSION

3.1. Microscopic Study

There was eight identifier fragments in each mindi. Stomata with anomcytic type was identified that represented by fig.A. Another fragment was discovered that was mesophyll of leaves and oxalic crystal by fig. B. The other fragment called trachoma which found in leaves by fig. C. The other fragment called xylem has two type of thickening, dot and ladder type by fig.D.

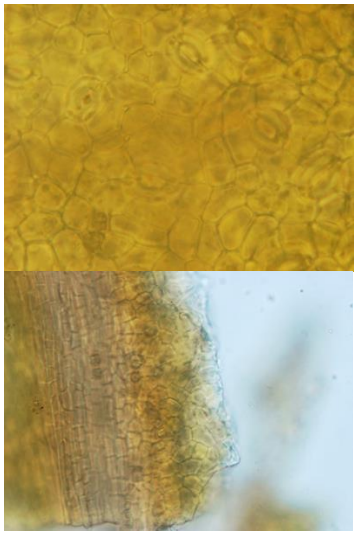

Figure 1: Various identifier fragments for mindi

3.2. Physicochemical Identification

All the result of physicochemical identification were showed in the table 1.

3.3. Determination of β- sitosterol Content in Raw Material

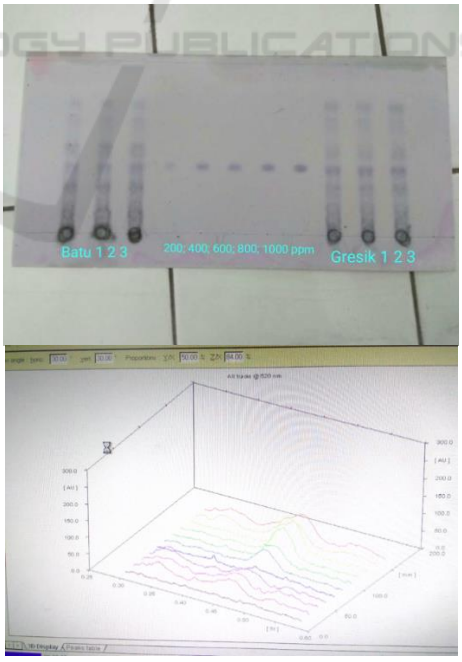

Figure 2. TLC Densitometri : Eluent Hexane Ethyl acetate = 7:3, with anisaldehyde spray and λ 520 nm

Table 1: Result of phytochemical identification of raw material (dried herbs) Mindi

Phytochemical parameters	Region	Sample form	Mean ± SD (n=3)
1 Water content (%)	Batu	dried leaves	12,28 ± 0,43
2 Total ash (%)	Batu	dried leaves	3,12 ± 0,34
3 Acid insoluble ash (%)	Batu	dried leaves	0,09 ± 0,08
4 Loss on drying (%)	Batu	dried leaves	8,66 ± 0,26
5 Ethanol soluble extractive (%)	Batu	dried leaves	9,98 ± 0,09
6 Water soluble extractive (%)	Batu	dried leaves	17,41 ± 0,43
7 B-Sitosterol content (%)	Batu	dried leaves	2,25 ± 0,02

REFERENCES

Sultana S., Khan M.A., Ahmad M., Bano A., Zafar M. and Shinwari Z.K. Authentication of herbal medicine Neem (*Azadirachta indica* A.Juss.) Using taxonomic and pharmacognostic techniques. Pak. J. Bot. 2011; 43: 141-150.

Mabberley DJ. A Monograph of Melia in Asia and the Pacific: The history of White Cedar and Persian Lilac. The Gardens' Bulletin Singapore. 1984. **37** (1): 49–64. Retrieved 28 September 2017.

The Editors of Encyclopaedia Britannica. Meliaceae, Encyclopaedia Britannica inc. 2015. (https://www.britannica.com/plant/ Meliaceae, September 25, 2017)

Sharma D, and Paul Y. Preliminary and Pharmacological Profile of *Melia azedarach L.*: An Overview Journal of Applied Pharmaceutical Science. 2013. Vol. 3 (12), pp. 133-138, December,

Rishi K. and Singh R. Chemical components and insecticidal properties of Bakain *(Melia azedarach L.)* - A Review. Agri. Rev. 2003; 24(2): 101-115.