VARIASI ANATOMI DAUN DAN KANDUNGAN KLOROFIL TANAMAN CINCAU HIJAU YANG BERPOTENSI SEBAGAI TANAMAN OBAT

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ABSTRAK

T**a**naman cincau merupakan salah satu tanaman yang banyak tumbuh di Indonesia. Tanaman cincau memiliki banyak manfaatnya, sehingga berpotensi untuk dikembangkan sebagai tanaman obat. Bagian daun dari tanaman cincau yang umum digunakan adalah sebagai minuman segar. Variasi daun tanaman cincau hijau memiliki ciri khas tersendiri. Anatomi merupakan salah satu cara untuk membedakan jenis suatu tanaman. Selain itu kandungan klorofil tanaman cincau hijau perlu diukur untuk mengetahui besarnya kandungan klorofil yang terdapat pada tanaman tersebut. Penelitian ini dilaksanakan pada bulan April sampai bulan Mei 2021. Jenis-jenis tanaman cincau hijau yang diamati adalah *Cocculus orbiculatus* , *Cyclea barbata*, dan *Premna oblongifolia* Pengamatan anatomi dilakukan pada permukaan atas dan bawah daun dengan menggunakan metode utuh (whole mount). Kandungan klorofil diukur dengan menggunakan metode spektrofotometri. Hasil penelitian menunjukkan bahwa stomata pada tanaman cincau hijau ditemukan hanya pada permukaan bawah daun, bentuk sel epidermis ada yang bergelombang yang terdapat pada *Cyclea barbata* dan *Cocculus orbiculatus*, sedangkan yang rata terdapat pada *Premna oblongifolia*. Bentuk stomata anisositik terdapat pada *Cyclea barbata* dan *Premna oblongifolia*, sedangkan bentuk stomata pada *Cocculus orbiculatus* adalah anomositik. Ada perbedaan kandungan klorofil a, b, dan total. Klorofil a, b, dan total yang tertinggi terdapat pada *Cyclea barbata*, sedangkan kandungan klorofil a, dan total yang terendah terdapat pada *Premna oblongifolia*.

Kata kunci; Cincau hijau, klorofil, tanaman obat

ANATOMICAL VARIATIONS OF LEAVES AND CHLOROPHYLL CONTENT OF GREEN CINCAU PLANTS THAT HAVE THE POTENTIAL AS MEDICINAL PLANTS

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ABSTRACT

Cincau plant is one of the plants that are widely grown in Indonesia. Cincau plant has many benefits, so it has the potential to be developed as a medicinal plant. The leaf part of the commonly used cincau plant is as a fresh drink. Variations of green grass leaves have their own characteristics.Anatomy is one way to distinguish the type of a plant. In addition, the chlorophyll content of green cincau plants needs to be measured to determine the amount of chlorophyll content contained in the plant. This research was conducted from April to May 2021. The types of green grass plants observed are *Cocculus orbiculatus*, *Cyclea barbata*, and *Premna oblongifolia*. Anatomical observations are carried out on the upper and lower surfaces of the leaves using a whole mount method. Chlorophyll content is measured using spectrophotometry method. The results showed that stomata in green plants are found only on the lower surface of the leaves, the shape of epidermis cells there are wavy in *Cyclea barbata* and *Cocculus orbiculatus*, while the flat ones are found in *Premna oblongifolia*. The anisositic stomata form is found in Cyclea barbata and Premna oblongifolia, while the stomata form in Cocculus orbiculatus is anomocytic. There are differences in the content of chlorophyll a and total chlorophyll. Chlorophyll a and total chlorophyll are highest in Cyclea barbata, while the lowest content of chlorophyll a, and total chlorophyll are found in Premna oblongifolia.

Keywords; Green cincau, chlorophyll, medicinal plants

1. Introduction

Cincau plant is one of the plants that are widely used by the community. The part used is the leaf part and is generally made as a fresh drink. Green cincau is a plant that has the potential to be developed in addition to being a fresh drink as well as a medicinal plant. Cincau plants especially green cincau many types. Some are vines and some are in the form of Lampung trees. 1. Introduction. Types of green grass plants in Indonesia are Cyclea barbata, Stephania japonica, Stephania capitata, and Cocculus orbiculatus (Mursafitri, *et al*., 2016). Stephania capitata (Blume) Spreng. This type of plant is widely used by the public as a fever remedy and diarrhea medicine. Stephania capitata is called oil cincau, because it has a shiny leaf surface like oily. (Mentari, *et al*. 2019). Another type of cincau is Premna oblongifolia Merr. , is a group of green cincau whose leaves are also widely used by traders of cincau drinks. Green cincau (Premna oblongifolia Merr.) has a habitus tree needs to be developed because it contains anticancer compounds that are effective and safe for the body. (Widyanto, 2010).). Cyclea barbata Miers is a spreading cincau, the administration of chopped leaf extract can improve the morphological abnormalities of spermatozoa in mice spread by cigarette smoke (Atikasari, 2010). Cocculus orbicularis (L.) DC is a cincau that grows vines and leaf extracts contain flavonoids, tannins, and sugar compounds or glycon (Febriani, 2012).

Cincau plants have leaves that vary in shape, and to distinguish one type from another type can be done anatomical observations, especially the leaves. In addition, cincau leaves have potential as a functional food. According to Muchtadi (2004), functional food has three basic functions. One of them is sensory (the color and appearance is interesting, the taste is good. The leaves of cincau are green, the green color is determined by its chlorophyll content. Therefore, in addition to observing the anatomy of the leaves, it is necessary to analyze the content of chlorophyll.

Based on this background, research was conducted to determine the anatomical differences in the types of chopped leaves found and the content of chlorophyll in green grass plants.

MATERIAL AND METHOD

Materials and Tools

The materials used in this study are 3 types of chopped leaves, plastic, aquades, safranin 1%, alcohol 70%. Tools used scissors, razors, tweezers, glass objects, glass covers, cameras, microscopes, labels, rulers, beaker glass, erlenmeyer, test tubes, measuring glass tube racks, funnels, volume pipettes, mortar, vibrators, analytical scales, centrifuges, UV-Vis spectrophotometers, knives.

Sampling

Cincau plants are taken from Bandar Lampung and Pesawaran. The types of plants found are 3 different types. Habitus liana there are 2 types and habitus tree there is 1 type. Identification and preparation and analysis of chlorophyll content was conducted in the Botanical Laboratory of the Department of Biology FMIPA University of Lampung.

Leaf Anatomy Observations

Making paradermal incisions using whole mount method (Sass, 1951). The bottom and top surface layers are taken using razor blades. The layer is placed on the glass of the object that has been tested safranin 1% then covered with a glass cover. The anatomy observed is the upper and lower epidermis forms of the leaves, as well as the stomata form.

Chlorophyll Content Measurement

The steps measuring chlorophyll content of 0.1 g from each leaf of cincau were taken randomly 9 times then the leaves were finely crushed in mortar and then added 10 mL of alcohol 95%. Chlorophyll extract solution is then filtered using filter paper, if the extract solution is reduced then added alcohol again until the solution 10 mL. Furthermore a solution of chlorophyll extract is inserted into the test tube as well as tightly closed. Chlorophyll extract is then inserted as much as 1 ml into the centrifuge after it is measured its absorbance using a UV-Vis spectrophotometer at wavelengths of 649 nm and 665 nm respectively.

RESULTS AND DISCUSSION

1. Leaf Anatomy

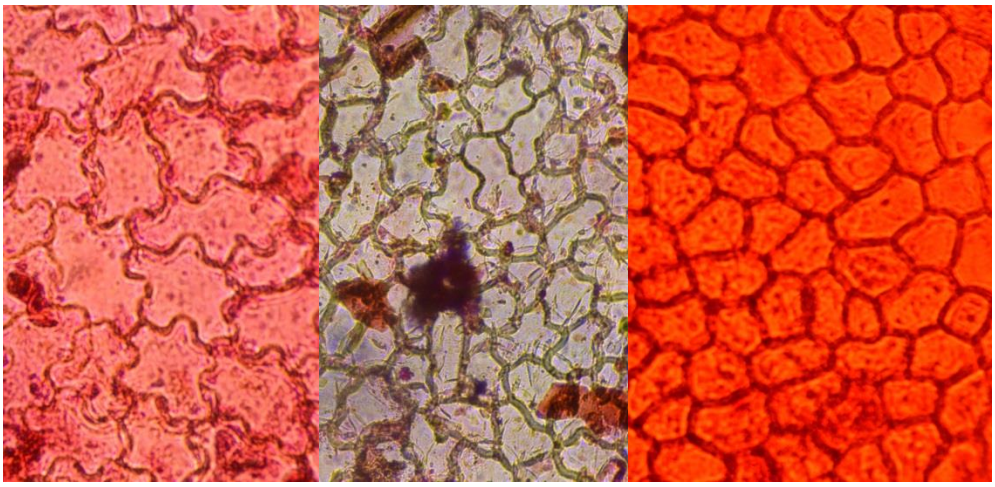

Figure 1. Epidermis under the leaves of *Cocculus orbiculatus* (1), *Cyclea barbata* (2), *Premna oblongifolia* (3)

Figure 1 shows the anatomy of the upper surface of the leaf. These three types of cincau both do not have stomata on the upper surface of the leaves. Epidermis under the leaves of green plants there are flat edges and some are notched. The notched epidermis is found in Cyclea barbata and the number of indentations is 3 to 5. This type of green grass is a cincau whose leaves are hairy and vines, as well as Cocculus orbiculatus is a cincau that grows vines, has an epidermis whose edges are notched and the number of indentations 5 to 9. This is in accordance with the research that has been done Mursafitri et al. 2016) that Cyclea barbata and Cocculus orbiculatus both have notched epidermis edges, the difference lies in the number of indentations, in addition to the presence of a dense tricoma in Cyclea barbata. Tricoma is a single-celled or multicellular hair formed from epidermis cells (Hidayat, 1995).

The anatomy of the lower surface of the leaves of 3 types of green cincau can be seen in Figure 2 below. :

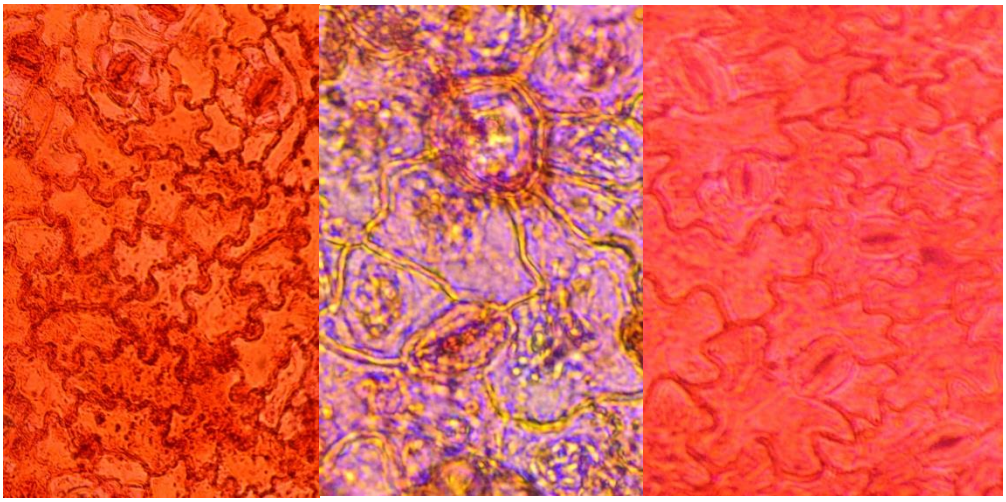

Figure 2. Epidermis under the leaves of Cocculus orbiculatus (1), Cyclea barbata (2), Premna oblongifolia (3)

Figure 2 shows that the three types of green jelly have only stomata on the lower surface of the leaves. According to Moralita and Civil (2019), scattered stomata are on the lower surface called hipostomatics. The stomata type in Cocculus orbiculatus and Premna oblongifolius is anisositik, while the stomata type in Cocculus orbiculatus is anomocytic.. The type of anisositic stomata is characterized by a closing cell surrounded by three neighboring cells that are not equally large, while the type of anomocytic stomata is characterized by a closing cell surrounded by a number of cells that do not differ in size and shape from other epidermis cells (Hidayat, 1995)

2. Chlorophyll Content

The content of chlorophyll a, b, and total leaves of cincau can be seen in the table below:

No	Species	Chlorophyll a	Chlorophyll b	Total Chlorophyll
1	*Cyclea barbata*	1,53[c]	1,22[a]	2,75[b]
2	*Premna oblongifolia*	0,92[a]	0,69[a]	1,60[a]
3	*Cocculus orbiculatus*	0,96[ab]	0,68[a]	1,64[ab]

Chlorophyll levels a, b, and total are measured using spectrophotometry. Each leaf is measured 9 times. The results of various analyses showed that each type of cincau plant has different levels of chlorophyll a, b, and total. BNT test results showed that the content of chlorophyll a in Cyclea

barbata there is a difference with Cocculus orbiculatus and Premna oblongifolia. But there are differences in the content of chlorophyll a in Cocculus orbiculatus and Premna oblongifolia The largest content of chlorophyll a found in Cyclea barbata is 1.53, the lowest is found in Premna oblongifolia. Chlorophyll b content between 3 types of cincau no difference. The total chlorophyll content between Cyclea barbata is no different from Cocculus orbiculatus but is distinct from Premna oblongifolia. The highest total chlorophyll content is found in Cyclea barbata. The results of research Nurdin et al. (2009), proved that the leaves of cincau (Premna oblongifolia Merr.) have the highest chlorophyll levels compared to centella asiatica, katuk, and mulberry leaves, so that the leaves of cincau are used as an ingredient to make chlorophyll derivative powder. In addition, the results of phytochemical powder extract Cu-derived chlorophyll leaves cincau (Premna oblongifolia Merr.) showed that cu-derived chlorophyll extract powder contains 5 major phytochemical substances useful for improved health include: alkaloids, saponins, tannins, steroids, and glycosides. But from the results of this study it turns out that the content of chlorophyll a and total Premna oblongifolia Merr. smallest compared to other cincau. While Cyclea barbata has the highest content of chlorophyll a, b, and total compared to other green cincau.

Conclusion:

The conclusion of this study is the form of epidermis cells whose edges are flat in Premna oblongifolia and which are notched on Cyclea barbata and Coccculus orbiculatus; The stomata forms Cyclea barbata and Premna oblongifolia are anisositic, and at anomositic in Cocculus orbiculatus. The content of chlorophyll a, and the largest total chlorophyll found in Cyclea barbata and the smallest in Premna oblongifolia.

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