INTRODUCTION

Indonesia is a country that has enormous biodiversity potential. Geographically, Indonesia has many types of plants that can be used traditionally as medicines for various diseases (von Rintelen et al., 2017). One of them is the island of Borneo or also known as Kalimantan, which has the potential of traditional medicine knowledge by various tribes and is rich in useful plants (Khoo et al., 2016).

Sangkareho (Callicarpa longifolia Lam.) is one of the native plants of Borneo which belongs to the genus Callicarpa (Novaryatiin et al., 2018; Qamariah et al., 2016). This plant contains a source of natural compounds and can be used as traditional medicines (Harley et al., 2004). The Callicarpa genus is utilized by one of the indigenous tribes of Kalimantan, the Dayak Tunjung tribe (Setyowati, 2010). Callicarpa longifolia, also called “karehau”, is traditionally used as a treatment for cold symptoms and inflammation of the roots, while the leaves are useful as a wet powder with analgesic, anti-inflammatory, antimicrobe, and antioxidant activity (Handayani & Natasia, 2018; Erwin et al., 2015).

Pharmacognostic studies are the first step in the standardization process of medicines derived from plants (Yuan et al., 2016). This research helps identify the nature and characteristics of a plant material. Identification and quality assurance of an ingredient are important prerequisites for ensuring plant quality that will contribute to safety and efficacy (Castillo et al., 2020; Ekor, 2013).
According to previous research it was revealed that the leaves of *C. longifolia* with 70% ethanol extract had several secondary metabolite compounds such as flavonoids, tannins, saponins, and terpenoids (Supomo *et al.*, 2016; Semiawan *et al.*, 2015). However, research on the content of chemical compounds from the roots of *C. longifolia* plants especially those originating from South Kalimantan has never been done before, so researchers are interested in examining the pharmacognostic study of *C. longifolia* by organoleptic, macroscopic, microscopic, identification of groups of chemical compounds, and thin-layer chromatography (TLC). This pharmacognostic study is expected to be able to assist in identifying the content of efficacious compounds especially those found in the roots of the *C. longifolia* plant.

**MATERIALS AND METHODS**

**Plant material**

*Callicarpa longifolia* plant was collected from Pelaihari, South Kalimantan in the month of January 2018. The plant was identified by Laboratory of Pharmacognosy, Faculty of Mathematics and Natural Sciences, Universitas Lambung Mangkurat.

**Pharmacognostic study**

Coarse root powder of *C. longifolia* is used to study organoleptic, macroscopic, microscopic, phytochemical identification, and TLC profiles of *C. longifolia* ethanol extract (Supomo *et al.*, 2016; Wulandari, 2011; Hanani, 2014; Gandjar & Rohman, 2007; Puspadiwi *et al.*, 2013).

**RESULTS AND DISCUSSION**

**Organoletic test**

*Callicarpa longifolia* root observed shape, color, taste, and odor based on five respondents’ opinions. Organoleptic examination of fresh *C. longifolia* root color was light brown while the root simplicia was brown. Fresh roots and simplicia of *C. longifolia* has a bitter and some bitter taste, the taste is suspected to have an alkaloid and saponin compound as according to Harbone (2006), alkaloids and saponins have a bitter or bitter taste. The smell of fresh roots and simplicia of *C. longifolia* has a distinctive odor that is a rather pungent odor.

**Macroscopic characteristics**

Macroscopically, the fresh root of *C. longifolia* is the length around ±90 cm; the width of the *C. longifolia* root is around ±1 cm; and for the *C. longifolia* root form it has a spear shape (Tjitrosoepomo, 2005) with a tapering system, as presented in Figure 1.

![Figure 1. Callicarpa longifolia root](image_url)
into the ship. The cortex is composed of several layers of cells, which are close to the epidermal layer (Palmgren, 2018).

At the root of the transport beam system consists of xylem and phloem arranged alternately. The transportation file consists of xylem or a means of transportation used to transport food and nutrient extracts from the soil to the whole body of the plant, and phloem, which is a file that functions as a carrier of photosynthesis from the leaves to the entire body of the plant (Turner & Sieburth, 2003). Pith is located between transport vessels that are in the parenchymal tissue. The function of the pith itself is used to store nutrients for plants, travel nutrients in the stems, branches, leaves and roots of plants. Stone cells (sclereids) is a network of sclerenchyma cells that are relatively round with a thick cell wall, this network serves to strengthen the body of the plant (Whitehill et al., 2016).

Calcium oxalate crystal as can be seen in Figure 3 is indicated by black dots (Toolakou et al., 2016). The function of calcium oxalate crystal is as a protector for plants, because calcium oxalate can react allergically to animals that eat it. Fibers are sclerenchym tissue, consisting of cells that are elongated with thick and pointed-ended cell walls, which function as supporting tissues (Whitehill et al., 2016).
Phytochemical screening

Phytochemical screening of *C. longifolia* roots showed positive results on the presence of alkaloid, flavonoid, saponin, and triterpenoid compounds. These results are in line with previous studies reported by Ardhany et al. (2019) and Saputra (2016).

Thin-layer chromatography profile

Thin-layer chromatography results using ethyl acetate : methanol : water (8 : 2 : 1) eluent provide good stain management and quite clearly separated. On observations using UV<sub>254</sub> nm obtained three stains with the Rf value of 0.72; 0.61; and 0.54. Observation using UV<sub>366</sub> nm appeared single white stain with Rf value of 0.54. Observation using H<sub>2</sub>SO<sub>4</sub> stain viewer which was then heated in an oven obtained four stains with Rf value of 0.14; 0.54; 0.61; and 0.72. From the results of TLC profiles obtained four spots that showed about samples using eluent ethyl acetate : methanol : water (8 : 2 : 1). For the value of Rf is in accordance with the range, while the value of Rf between 0.2 - 0.8 (Gandjar & Rohman, 2007).

The Rf value can be made to prove in identifying the composition. If the value of Rf has the same value, then the composition can be claimed to have the same or similar characteristics. Meanwhile, if the Rf value is different from the complement that can be claimed to represent a different composition (Kartini et al., 2020).

Based on the description, seen from the TLC profile and Rf value of 70% ethanol extract of *C. longifolia* root with ethyl acetate eluent : methanol : water (8 : 2 : 1). The eluent optimization is good for improvement, but for development it can be done by increasing the polarity of the eluent mixture used (Zhang et al., 2018). The TLC plate with multiple spotting views is presented in Figure 4, while a comparison of the Rf values obtained is presented in Table I.

**Table I.** The Rf value of TLC results with ethyl acetate : methanol : water (8 : 2 : 1) eluent

<table>
<thead>
<tr>
<th>Stain Viewer</th>
<th>Spot</th>
<th>Rf</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>UV&lt;sub&gt;254&lt;/sub&gt; nm</td>
<td>1</td>
<td>0.72</td>
<td>Dark blue</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.61</td>
<td>Dark blue</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0.54</td>
<td>Dark blue</td>
</tr>
<tr>
<td>UV&lt;sub&gt;366&lt;/sub&gt; nm</td>
<td>1</td>
<td>0.45</td>
<td>White</td>
</tr>
<tr>
<td>H&lt;sub&gt;2&lt;/sub&gt;SO&lt;sub&gt;4&lt;/sub&gt;</td>
<td>1</td>
<td>0.72</td>
<td>Red</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>0.61</td>
<td>Yellow</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0.54</td>
<td>Dark Yellow</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0.14</td>
<td>Dark Yellow</td>
</tr>
</tbody>
</table>

**CONCLUSION**

Characteristics of *C. longifolia* root there are several examinations consisting of organoleptic examination of *C. longifolia* root has a light brown root color, a bitter taste and a bit bland and a rather pungent characteristic odor. Macroscopic examination of *C. longifolia* root has a length of approximately 290 cm; width of approximately 21 cm; and for the shape of the roots of *C. longifolia* is a spear with a tapered root system. In microscopic examination of the identified fragments the cell forms are epidermis, exodermis, cortex, endodermis, transport beam, calcium oxalate crystal, and stone cells. From the results of identification of chemical compounds, the compounds contained in *C. longifolia* root are alkaloids, flavonoids,
saponins, and triterpenoids. The results of the TLC profile showed four stains on the plate using eluent ethyl acetate : methanol : water (8 : 2 : 1).

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REFERENCES


