Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

**E-ISSN:** 2278-4136
**P-ISSN:** 2349-8234
https://www.phytojournal.com
JPP 2023; 12(2): 131-137
Received: 27-12-2022
Accepted: 03-02-2023

**Mely Kurnia Febriyanti**
Pharmacy Undergraduate Study Program, Samarinda College of Health Sciences, Indonesia

**Supomo**
Pharmacy Undergraduate Study Program, Samarinda College of Health Sciences, Indonesia

**Henny Nurhasnawati**
Pharmacy Undergraduate Study Program, Samarinda College of Health Sciences, Indonesia

**Noorcahyati**
Samboja Centre for Implementation of Environmental and Forestry Instrument Standards, Indonesia

**Corresponding Author:**
**Supomo**
Pharmacy Undergraduate Study Program, Samarinda College of Health Sciences, Indonesia

# The characterization of the simplies and ethanol extracts of limpasu leaf and fruit (*Baccaurea lanceolata* (Miq.) Müll. Arg.)

**Mely Kurnia Febriyanti, Supomo, Henny Nurhasnawati and Noorcahyati**

**Abstract**
*Baccaurea lanceolata* is forestry plantation known as spleen which is used by the Bakumpai Dayak Tribe as a diabetes herb and spleen fruit is used as a mixture of cold powder which is reputed to moisturizer facial skin. There are potential part of spleen plantation potentionally to be developed into herb. There are potential part of spleen plant plantation potentionally to be developed into herb. The study targeted to identified the characterization of simplicia and the ethanol extract of spleen leaves and fruits (*Baccaurea lanceolata*). Maceration method implimentated at extracted Simplicia completed 70% solvent. Specific characteristics grouping spleen organoleptically of simplicia and leaf, fruit extracts of the have. The shape and arrangement distinctifally macroscopically look and leaf simplicia found specific identifier fragments at microscopically look. The specific parameter test was held for water-soluble extract and ethanol-soluble extract and identified 3.27% for leaf simplicia; 3.07%, leaf extract 7.77%; 24%, fruit simplicia 9.18%; 14.2%; and fruit extract 25%; 45%. Phytochemical screening test identified specifically simplicia and leaf extracts containing alkaloids, flavonoids, steroids and tannins. Non-specific parameter test identified water content, ash content and acid insoluble ash content on leaf simplicia 15%;0.26%; 0.20%, 18% leaf extract; 0.16%; 0.14%, fruit simplicia 5.67%; 0.14%; 0.18%, fruit extract 9%; 0.16%; 0.17%.
The specific test of gravity identified leaf extract were 0.98 g/ml and fruit extracts 0.99 g/ml.
The test of microbial contamination using the total plate count (ALT) and mold/yeast count (AKK) method on leaf simplicia $1.6 \times 10^{-2}$ colonies/g; $5.5 \times 10^{-2}$ colonies/g, leaf extract $10 \times 10^{-3}$ colonies/g; $3 \times 10^{-3}$ colonies/g, fruit simplicia $6.1 \times 10^{-2}$ colonies/g; $2.8 \times 10^{-2}$ colonies/g, and fruit extract $6.9 \times 10^{-2}$ colonies/g; 0 colonies/g.

**Keywords:** Characterization, simplicia, specific parameters, and non-specific parameters, (*Baccaurea lanceolata* (Friends.) Müll. Arg.)

## Introduction
Kalimantan's forest potentially herb producer, therefore, high probabilities developing well-being community and the advancement science [1]. The Dayak tribe is a native of the Kalimantan region. They are spread across the administrative areas of the provinces of South Kalimantan, Central Kalimantan, West Kalimantan and East Kalimantan. The life of the Dayak people seems inseparable from the surrounding forest [2]. The rivers banks and forests of East Kalimantan produces medicinal plants of spleen fruit (*Baccaurea lanceolata* (Friends.) Garbage. argument). The Bakumpai Dayak people believe in trees *Baccaurea lanceolata*known as the spleen tree, and empirically trusted it can be used as diabetes herb and it is used as an ingredient for mixing cold powder which is believed to facial skin moisturizer as it contains antioxidants which are good for the health and skin care of Dayak women [3].
There's no relevan and linear reported research in describing characterization of plant extracts from*Baccaurea lanceolata*. The grouping strategy implemented to identified quality of a simplicia material, one way to control quality of simplicia is by standardizing or characterizing it. Characterization of simplicia is linearly process to identified the used of simplicia as a raw material for traditional herb and meet the requirements listed in the Indonesian Medika Materia and Indonesian Herbal Pharmacopoeia, is a mandatory [4]. It's necessary implementation of characterization and it permiere phase of identification determine characteristics of it extract. Specific and non-specific parameters used at it parameters [5].

## Materials and Methods
### a. Material
This research used such materials used, such as alcohol, amyl alcohol, acetic anhydrous acid, 2N hydrochloric acid, concentrated hydrochloric acid, concentrated sulfuric acid, distilled

water, iron (III), 1% chloride, chloroform, bouchardat reagent, dragendorf reagent, mayer reagent, powder. magnesium, PDA (*Potato Deextrose Agar*), THAT (*Nutrient Agar*).

**b. Tool**

Several supported equipment used, laboratory glassware, glassware (Pyrex®), blender (Miyako®), cotton swaps, petri dishes, porcelain dishes, incubators (Memmert®), refrigerators, maserators (Thermo®) , water bath, 60 mesh sieve, tweezers, dropping pipette, horn spoon and analytical balance (Ohaus®), tongs, furnace, oven, kinetic stirrer (IKA®RW 20 digital), desiccator, pycnometer, Luminar Air Flow, incubator.

**Work Order**

**a. Plant Determination**

The determination was carried out at the Wanariset Hebarium Laboratory and it placed at the Natural Resources Conservation Technology Research and Development Center (BKSDA), Jl. Soekarno Hatta No. km. 38, Sungai, Samboja, Kutai Kartanegara, East Kalimantan. The determination was carried out at the Wanariset Hebarium Laboratory and it placed at the Natural Resources Conservation Technology Research and Development Center (BKSDA), Jl. Soekarno Hatta No. km. 38, Sungai, Samboja, Kutai Kartanegara, East Kalimantan.

**b. Making Simplicia**

The collected leaves and fruits of the spleen are separated from unwanted parts, such as twigs and other impurities. The following phase, washed with clean running water and drained by chopping the leaves and fruit by cutting ± 1 cm and drying, the leaves is done by aerating, while for drying the fruit is done by drying it in the sun covered with a black cloth to dry ± 3 days until dry simplicia is obtained. The simplicia obtained was blended and sieved with 60 mesh, then the powder was stored in a clean container and tightly closed.

**c. Extract Manufacturing**

Simplisia powder was weighed as 200 grams, extracted using maceration method 70% ethanol solvent as much as 1000 ml (1:10) [6]. Followed next phase is stirring out for two hours and allowed to stand for 22 hours, then filtered and the dregs were macerated completed same type and amount of solvent. The macerate obtained was evaporated over water bath to obtain a thick extract.

**d. Specific Characterization Examination**

The simplicia specific group and ethanol extract of spleen leaves and fruit included organoleptic tests, macroscopic tests, microscopic tests, water soluble extract content, ethanol extract content and phytochemical screening.

**1) Organoleptic Test**

The determination of organoleptic in extracts method includes use of five description to formulate shape, color, smell and taste of simple initial recognition as objective as possible.

**2) Macroscopic Test**

The test of macroscopic held by using a magnifying glass or unnecessary supported equipment. This test was carried out to identified specific simplicia morphology, size and color [7].

3) **Microscopic Test:** The form of simplicia examined in leaf powder and spleen fruit was carried out by placing the simplicia powder on an object glass completed dripped with chloralhydrate. The identification fragments were observed under a microscope to identified form of cells, the contents of the cells or plant tissues, leaf simplicia powder and spleen fruits.

**4) Water Soluble Extract Content**

Certain extract of 5 grams was put into a plugged flask, added 100 mL of chloroform saturated water. Plenty of time shaking at 6 hours ealier, leave for 18 hours. Filtered, pipetted 20 mL of the filtrate, evaporated to dryness in a shallow, flat-bottomed cup that has been tareed. The residue was heated at 105°C to constant weight. Content is calculated in % water soluble essence [8].

**5) Kadar Sari Larut Ethanol**

Certain extract of 5 grams was put into a plugged flask, added 100 mL of 95% ethanol, shaken repeatedly for the first 6 hours, left for 18 hours. Filtered, pipetted 20 mL of the filtrate, evaporated to dryness in a shallow, flat-bottomed cup that has been tareed. The residue was heated at 105°C to constant weight. The concentration was calculated in % ethanol soluble extract.

**e. Phytochemical Screening**

Solution test prepared by weighing 1 gram of extract, dissolved in 10 mL of 70% ethanol in volumetric flask, added distilled water to 100 mL. Then the following test was held [9].

**1) Alkaloid Compound Test**

**Mayer's reagent**

Followed by taking 10 drops of the filtrate, put it in a test tube, add 2 drops of Mayer's reagent. When it come to white or yellow precipitate forms, it indicates the presence of alkaloids.

**Bouchardat reagent**

It takes 10 drops of filtrate, put into a test tube, add 2 drops of Bouchardat reagent. When it comes brown to black precipitate forms, it indicates the presence of alkaloids.

**Dragendorf reagent**

It takes 10 drops of the filtrate, put it in a test tube, add 2 drops of dragendrof reagent. When it comes orange to red-brown precipitate forms, it indicates the presence of alkaloid compounds. When it comes to three reagents give positive results, the extract is positive for containing alkaloid compounds.

**2) Flavonoid Compound Test**

Few amount of magnesium powder, 1 mL concentrated hydrochloric acid and 2 mL of amyl alcohol were added to 2 mL the filtrate, shaken and allowed to separate. Flavonoids are positive if a red, yellow or orange color is formed on the amyl alcohol layer.

**3) Tannin Compound Test**

Distilled water added to 10 drops of the filtrate until the color of the filtrate faded, added 1-2 drops of ferrous (III) chloride reagent. If a blue or green-black color is formed, it indicates the presence of tannins [10].

**4) Saponin Compound Test**

Totally 10 drops of filtrated were put into tube test tube, added 5 drops of hot water, cooled, shaken vigorously for 10

seconds. When it steady froth is formed for 10 minutes as high as 1-10 cm and on the addition of 1 drop of 2 N hydrochloric acid, the foam does not disappear, then it is positive for saponin.

**5) Steroid Compound Test**

0.5 gram of extract was macerated in 20 mL of n-hexane for two hours. Filtered, evaporated, added 3 drops of concentrated sulfuric acid. When it comes to green is formed, it indicates the presence of steroids.

**f. Checking Non-Specific Parameters**

Non-specific characterization of simplicia and ethanol extract of spleen leaves and fruit included moisture content, ash content, acid insoluble ash content, specific gravity, ALT (total plate number) and AKK (mould/yeast number).

**1) Water Rate**

1 gram of ethanol extract was weighed, put in the oven for two hours accompanied by temperature of 105˚C. after two hours put in the desiccator for approximately 15 minutes then weighed successively until the difference between the 2 weighings is not more than 0.25% [11].

$$\frac{b-(c-a)}{b} \times 100\%$$

Description:
a = constant weight of the dry cup
b = initial sample weight
c = weight of cup + sample after drying

**2) Determination of Ash Rate**

2 grams of ethanol extract which been weighed carefully, put into a platinum crucible or silicate crucible that has been ignited and tarred, and leveled. Heat at 600˚C for 3 hours then cool and then weigh until a constant weight is obtained. If the charcoal cannot be removed in this way, hot water is added, filtered through an ash-free filter paper. Burn the residue and filter paper in the same crucible. The filtrate was put into the crucible, evaporated and ignited to a constant weight, then weighed. Calculated ash content of materials that have been dried in the air.

$$\frac{ash\ weight\ (g)}{simplicia\ weight\ (g)} \times 100\%$$

**3) Acid Insoluble Ash Rate**

Obtained ash of determination ash content boiled completed 25 ml of dilute hydrochloric acid for 5 minutes. This part does not dissolve at collected acid, filtered through an ash-free filter paper, washed accompanied by hot water, heated 450˚C for 15 minutes till constant weight, cooled and weighed. The acid insoluble ash content was calculated against the air-dried material. The range of acid insoluble ash content to meet the requirements is 0.7% [7].

$$\frac{ash\ weight\ (g)}{simplicia\ weight\ (g)} \times 100\%$$

**4) Specific Weight**

The pycnometer is cleaned, dried and calibrated. diluted extract 5% using distilled water, put into the pycnometer, and weighed. The weight of the filled pycnometer is reduced by the weight of the empty pycnometer. The specific gravity of the liquid extract is the result obtained by dividing the weight of the extract by the weight of water in a pycnometer at 25 °C.

$$d = \frac{W2-W0}{W1-W0}$$

Description:
d = specific gravity
W0 = empty pycnometer weight
W1 = weight of pycnometer + water
W2 = pycnometer weight + extract

**5) Microbial contamination**

1 gram of extract was dissolved in 10 mL of distilled water, shaken until homogeneous to obtain a 10% dilution.$^{-1}$. Prepared 3 tubes, put 9 mL of distilled water in each tube, pipetted 1 mL of 10 dilution$^{-1}$ into the first tube shaken, obtained dilution $10^{-2}$.Do the same thing until a dilution of 10 is obtained$^{-4}$.

**6) Total Plate Number (ALT)**

Pipette 1 mL of each dilution into a petri dish using a different and sterile pipette for each dilution. Into each petri dish poured 15 mL of NA media (*Nutrient Agar*) that has been thawed, the cup is shaken so that the suspension is evenly mixed. Incubation at 37°C for 24 hours in an inverted position [12].

**7) Mold/Yeast Number (AKK)**

Pipette 1 mL of each dilution into a sterile petri dish (triplo). Each petri dish was poured 15 mL of PDA media (*Potato Deextrose Agar*) that has been thawed, the petri dish is shaken so that the suspension is evenly mixed. Incubation at 25°C for 5 days in an inverted position. Yeasts are round, cylindrical or ovoid in shape and the colonies counted are round, white and separate colonies as well as mold colonies that have white, cotton-like fibers without distinguishing each colony color as well as single ones [13].

**Result**

Plant determination is held to ensure the correctness of the sample used. The results of the determination show that the samples used are plants,*Baccaurea lanceolata* (*Miq.*) *Müll. Arg*, from family*Phyllanthaceae* and the parts of the plant used are leaves and fruit flesh. Furthermore, simplicia processing is carried out, until leaf powder and fruit flesh are obtained. The simplicia powder was then extracted using the maceration method. The maceration process of both leaf simplicia and spleen fruit with a weight of 300 grams each of the powder obtained, then put it in a jar and extracted using the maceration method with 70% solvent, soaked for 24 hours with occasional stirring for 6 hours with a macerator and repeated [14].

The yield values of extracts on spleen leaves and fruit were obtained at 79.54% and 73.62% respectively, for the yield values showed 11% for spleen leaves and 4% for spleen fruit. According to [15], the size of the yield value indicates the effectiveness of the extraction process which is influenced by the type of solvent used, the size of the simplicia particles, the method and the extraction.

**Organoleptic Test:** Organoleptic test result targeted providing an initial introduction to simplicia and extracts in

the form of smell and taste which are objectively and simply carried out with the five senses. Examination of the organoletic ethanol extract of spleen leaves and fruit includes shape or consistency, color, taste and smell. The results of the organoleptic test can be seen in table 1.

**Table 1:** Organoleptic test results of leaf and fruit extracts

| Testing | Results | |
|---|---|---|
| | ED | EB |
| Form | Thick | Thick |
| Smell | Special | Special |
| Color | Dark green black | Brick red chocolate |
| Feel | Bitter | Bitter |

Information:
ED = Leaf Extract
EB = Fruit Extract

**Macroscopic Test**
The results of macroscopic examination of spleen leaves were single leaves, alternate, arranged in a spiral, the base of the leaf margins usually contained glands, the leaves were ovate to ovoid in shape, the flesh was thin, the veins were pinnate, the leaf length was 27 cm, the leaf width was 9 cm.

**Microscopic Test**
Observation microscopic result leaf simplicia found identifying fragments, namely epidermis, sclerenchyma, covering hairs, vascular bundles. Can be seen in figure 1.

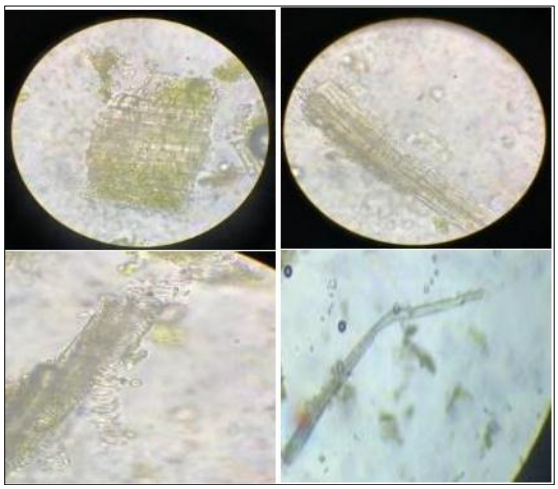

**Fig 1:** Microscopy test results on spleen leaf simplicia.

**Results of Determination of Water Soluble Extract and Ethanol Content**
Determination of water-soluble essence content aims to provide an initial description of the amount of chemical compounds that can dissolve in water solvents. (MOH, 2000). The results of water-soluble extracts in simplicia and extracts obtained an average of 3.27% for leaf simplicia, 9.18% for fruit simplicia, 7.77% for leaf extract and 25% for fruit extract. Determination of ethanol soluble essence content aims to determine the levels of compounds that can dissolve in ethanol solvent (Ministry of Health, 2000). The average yield of ethanol-soluble extracts in simplicia and extracts obtained was an average of 3.07% for leaf simplicia, 14.2% for fruit simplicia, 24% for leaf extract and 45% for fruit extract. The results of water and ethanol soluble extracts can be seen in table 2.
Based on the data in the table described, the ethanol-soluble extract content of simplicia and spleen leaf and fruit extracts showed higher results compared to water-soluble extracts. According to [16] this means that most of the secondary metabolites in spleen leaves and fruit are more soluble in ethanol solvents.

**Table 2:** Test results for water-soluble extracts and ethanol content of leaves and fruit

| Test | Results | | | |
|---|---|---|---|---|
| | SD | ED | SB | EB |
| Water soluble juice | 3, 27%±0, 03 | 7, 77%±0, 04 | 9, 18%±0, 14 | 25, 06%±5, 15 |
| Ethanol soluble juice | 3, 07%±0, 04 | 24, 00%±0, 00 | 14, 2%±1, 32 | 24, 06%±1, 50 |

Information:
ED = Leaf Extract SD = Leaf Simplicia
EB = Fruit Extract SB = Fruit Simplicia

**Results of Phytochemical Screening**
Screening of simplicia phytochemicals and ethanol extracts of leaves and fruit is an illustration of the class of compounds (secondary metabolites) contained in simplicia and extracts. The results can be seen in table 3.

**Table 3:** Hasil screening fitokimia

| Testing | Results | | | |
|---|---|---|---|---|
| | SD | ED | SB | EB |
| Alkaloid | + | + | + | + |
| Tannin | − | − | + | + |
| Saponin | − | − | − | − |
| Flavonoid | + | + | + | + |
| Steroid | + | + | + | + |
| Terpenoids | − | − | − | − |

Information
+: Contains chemical compounds
−: Does not contain chemical compounds

**Non-Specific Characterization**
Non-specific characterization of simplicia and ethanol extract of spleen leaves and fruit included moisture content, ash content, acid insoluble ash content, specific gravity, ALT (total plate number) and AKK (mould/yeast number).

**Results of Water Rate Determination**
Determination of the water content of simplicia and leaf and spleen fruit extracts was carried out with the aim of knowing the water content contained in simplicia and extracts, so as to avoid fungal growth [17]. The average results for determining the water content of leaf simplicia, leaf extract, fruit simplicia and fruit extract were 15%, 18%, 5.67% and 9%, respectively. According to [18], an extract is declared as a kentak extract if it has a water content between 5-30%. The results of determining the water content can be seen in table 4. Large water content can cause microbial growth because water is a medium for the growth of microorganisms and also as a medium for enzymatic reactions that can decompose their active compounds.

**Table 4:** Test results for determining the water content of simplicia and leaf and fruit extracts

| Test | Results | | | |
|---|---|---|---|---|
| | SD | ED | SB | EB |
| Water level | 15% ± 0, 00 | 18% ± 0, 00 | 5, 67% ± 0, 57 | 9% ± 0, 00 |

Information:
ED = Leaf Extract SD = Leaf Simplicia
EB = Fruit Extract SB = Fruit Simplicia

**Ash Rate Test Results**

Ash content is a material that is heated to a temperature where organic compounds and their derivatives are destroyed and evaporate, so that only mineral and inorganic elements remain. The purpose of determining the ash content is to determine the characteristics of the remaining non-organic ash content after ashing [19]. The ash content of simplicia and leaf and fruit extracts of spleen each had an average of 0.26% for leaf simplicia, 0.16% for leaf extract, 0.14% for fruit simplicia and 0.16% for fruit extract.

According to [20] the higher the ash content the higher the minerals contained in the material. These minerals can be organic salts (for example salts of malic acid, oxalate, pectic), inorganic salts (for example phosphate, chloride, sulfate nitrate and alkali metals), or in the form of minerals that are formed into complex organic compounds. The results of the ash content test can be seen in table 5.

**Table 5:** Test results for simplicia ash content and leaf and fruit extracts

| Test | Results | | | |
|---|---|---|---|---|
| | SD | ED | SB | EB |
| Ash content | 0, 26% ± 0, 00 | 0,16% ± 0, 02 | 0, 14% ± 0, 01 | 0, 16% ± 0, 01 |

Information:
ED = Leaf Extract SD = Leaf Simplicia
EB = Fruit Extract SB = Fruit Simplicia

**Acid Insoluble Ash Level Test Results**

Determination of acid insoluble ash content using ash obtained from the determination of total ash content by adding HCl. This parameter aims to determine contaminants originating from external factors such as sand and dust attached to the simplicia drying process [21]. The high acid-insoluble ash content indicates the presence of silicate content originating from soil or sand, soil and silver metal elements, as well as lead and mercury [22]. The results of acid-soluble tidal ash content can be seen in table 6.

**Table 6:** Results of tidal acid soluble ash content of simplicia and leaf and fruit extracts

| Test | Results | | | |
|---|---|---|---|---|
| | SD | ED | SB | EB |
| Acid insoluble ash content | 0, 20% ± 0, 02 | 0, 14% ± 0, 01 | 0, 18% ± 0, 01 | 0, 17% ± 0, 00 |

Information:
ED = Leaf Extract SD = Leaf Simplicia
EB = Fruit Extract SB = Fruit Simplicia

**Specific Weight Test Results**

Specific gravity is defined as the ratio of the density of a substance to the density of water with a mass value per unit volume. The principle of density of mass per unit volume at a certain room temperature (25%) is determined with a special pycnometer with the aim of providing a limit on the range of mass per unit volume which is a special parameter for liquid extracts to concentrated (thick) extracts that can still be poured and provides an overview dissolved chemical content. The specific gravity obtained can be seen in table 7.

**Table 7:** Test results for simplicia specific gravity and leaf and fruit extracts

| Test | Yield (g/ml) | |
|---|---|---|
| | ED | EB |
| Distilled water | 0,98 ± 0,01 | 0,98 ± 0,01 |
| Extract | 0,98 ± 0,01 | 0,99 ± 0,01 |

Information:
ED = Leaf Extract
EB = Fruit Extract

**Parameters of Total Plate Number and Mold/Yeast Number**

The principle of total plate and mold/yeast tests is to determine the presence of pathogenic microbes by microbiological analysis. The aim is to provide assurance that the extract does not contain pathogenic microbes and non-pathogenic microbes that exceed the specified limits because they affect the stability of the extract and are harmful to health (Ministry of Health, Republic of Indonesia, 2000).

The media used is NA(*Nutrient Agar*) against microbial contamination and PDA(*Potato Dextrose Agar*) on mold contamination because the media is most commonly used in the growth of microorganisms, for the purpose of microbial contamination of spleen leaves and fruit using the dispersion method by counting the number of bacteria*aerobic* mesophyll contained in a petri dish and incubated at 37˚C for 24 hours in an inverted position. Bacteria that are classified as mesophiles are bacteria that have a growth temperature of 20-40 ˚C [23]. In testing the number of yeast fungi which also uses the scattering and incubation method at 25˚C, the counted mold colonies are those that are shaped like cotton while Yeast is round in shape, the components produced by mold or yeast are carcinogenic and the smaller the number of molds/yeasts on the leaves and simplicia, it shows the better the process of making medicine [24].

Calculation of ALT and AKK can use a quantitative method, namely by counting the number of colonies that grow on the media in a petri dish by pouring [25]. The results of the amount of microbial contamination on the total plate number and the mold/yeast number can be seen in table 8.

**Table 8:** Total Plate Figures and Simplicia Mold/Kahmir Figures and Leaf and Fruit Extracts

| Test | Total colony contamination/g | | | | Colony requirements (BPOM, 2014) |
|---|---|---|---|---|---|
| | SD | ED | SB | EB | |
| Total plate number | $1,6 \times 10^{-2}$ | $10 \times 10^{-3}$ | $6,1 \times 10^{-2}$ | $6,9 \times 10^{-2}$ | < 10.000 |
| Mold/ yeast numbers | $5,5 \times 10^{-2}$ | $3 \times 10^{-3}$ | $2,8 \times 10^{-2}$ | 0 | <1000 |

Information:
ED = Leaf Extract SD = Leaf Simplicia
EB = Fruit Extract SB = Fruit Simplicia

The test results showed microbial and mold contamination in the simplicia ethanol extract and spleen leaf and fruit extracts each as much as $1.6 \times 10^{-2}$ column/g, $10 \times 10^{-3}$ colonies/g, $6.1 \times 10^{-2}$ colonies/g and $6.9 \times 10^{-2}$ colonies/g for total plate number, while for simplicia yeast mold count and leaf and spleen fruit extracts each were $5.5 \times 10^{-2}$ colonies/g, $3 \times 10^{-3}$ colonies/g, $2.8 \times 10^{-2}$ colonies/g and 0 colonies/g. These results are in accordance with the Regulation of the Head of the Food and Drug Supervisory Agency of the Republic of Indonesia concerning Quality Requirements for Traditional Medicines, namely the maximum limit for microbes <10,000

colonies/g and molds <1,000 colonies/g, so that spleen plants can be used as medicinal ingredients.

## Conclusion

Based on the results of research on specific and non-specific characterization of spleen leaves and fruit that has been carried out, it can be concluded as follows:

1. The results of simplicia organoleptic and spleen leaf and fruit extracts include viscous extracts, characteristic odor, dark green-black color in leaf extracts, brick-red brown color in fruit extracts, and a bitter taste. The results of macroscopic examination of spleen leaves were single leaves, alternate, arranged in a spiral, the base of the leaf margins usually contained glands, the leaves were ovate to ovoid in shape, the flesh was thin, the veins were pinnate, the leaf length was 27 cm, the leaf width was 9 cm. Microscopic results of identifying fragments on leaves, namely epidermis, sclerenchyma, covering hairs, transport bundles with a mesh type thickening mesh. The test results for the specific parameters of leaf simplicia, leaf extract, fruit simplicia and fruit extract contained water-soluble extracts, namely 3.27%, 7.77%, 9.18%, 25%, 3.07%, 24%, ethanol-soluble extracts. 14.2% and 45%. The results of the phytochemical screening test on the simplicia and spleen leaf extract contained alkaloids, flavonoids and steroids, while the simplicia and spleen fruit extract contained alkaloids, flavonoids, tannins and steroids.
2. The non-specific parameter test results for leaf simplicia, leaf extract, fruit simplicia and fruit extract water content were 15%, 18%, 5.67%, 9%. Ash content 0.26%, 0.16%, 0.14%, 0.16%, acid insoluble ash content 0.20%, 0.14%, 0.18%, 0.17%. Specific gravity 0.98 g/ml for leaves, 0.99 g/ml for fruit. The results of total microbial contamination in simplicia and leaf and fruit extracts of the spleen were $1.6 \times 10^{-2}$ colonies/g, $10 \times 10^{-3}$ colonies/g, $6.1 \times 10^{-2}$ colonies/g and $6.9 \times 10^{-2}$ colonies/g and the number of molds/yeasts $5.5 \times 10^{-2}$ colonies/g, $3 \times 10^{-3}$ colonies/g, $2.8 \times 10^{-2}$ colonies/g and 0 colonies/g.

## Acknowledgments

The research team would like to thank the laboratory staff, the two supervisors, the Samarinda College of Health Sciences campus who have facilitated the research that I have done, and thank the East Kalimantan Natural Resources Conservation Center for helping me in finding samples for research purposes.

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