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Photochemical Property of Ethyl Acetate of *Salam* Stem Cortex (*Syzygium polyanthum*)

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Abstracts

The purpose of this experiment is to understand the photochemical property of ethyl acetate extracted from *Salam* Stem Cortex (Syzygium polyanthum). The electrochemical test of the sample indicated the existence of secondary metabolic compound, i.e flavonoid, alkaloid, steroid, tannin, fenolat and terpenoid. The secondary metabolic compound was mostly beneficial for pharmacology as a herbal medicine.

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1. Introduction

Salam *(Syzygium polyanthum)* known as *Eugenia polyantha* is a *Myrtaceae* family [1]. Salam spread in south-east Asia (Burma, Indochina, Thailand, Malaya peninsula) and is widely recognized in Indonesia, especially west region of Indonesia (Sumatera, Kalimantan and Java) [2].

Salam contains secondary metabolic compound possessing plenty pharmacological activity to encounter various diseases [3]. Previous reports discussing about beneficial composition is yet minimum including its metabolic compound on the cortex. Metabolic compound such as alkaloid, phenolate, flavonoid and tannin is contained in the stem [4] and leaf [5] whereas the metabolic compound contained in cortex is yet few discussed.

Metabolic compound is separated by extraction method with polar, semi polar and non-polar solvent [6]. They state that semi-polar solvent such as ethyl acetate was able to dissolve several metabolic compounds.

This experiment attempted the extraction of metabolic compounds from Salam cortex

utilizing the semi-polar solvent, i.e ethyl acetate in order to further analyze the composition of secondary metabolic compound contained by Salam cortex. Those secondary metabolic compounds are mostly beneficial for herbal medicine.

2. Experimental Procedure

Salam Cortex Powder (Simplisia)

The Salam raw material was obtained from Wonosari, sub-district Ngaliyan, Semarang. Salam cortex was firstly cleaned and simply grinded by blander. The grinded Salam was then dried in the room temperature.

Maceration of Salam Cortex Powder

The extraction method employed in this experiment is maceration. A 1000 gram of Salam cortex powder was soaked to ethyl acetate solvent for 3x24 hours in room temperature. The solution was then filtered and cleaned by distilled water until it reached the normal ph. The solvent was then evaporated in the rotary vacuum evaporator at 45 ^{0}C with 60 rpm for 30 minutes.

Photochemical Characterization

1. Alkaloid

30 mg of sample was added to 3 ml HCl2N and stirred for 30 minutes at room temperature. The solution was further filtered and cleaned. Alkaloid test was performed by three variations of chemical reagent, i.e bouchardat, mayer and dragendorff. 1 ml of solution was added to 2 drops of reagent. The existence of alkaloid was shown by formed brown, white and brownish orange sludge for bouchardat, mayer and dragendorff reagent, respectively [4].

2. Phenol

The one milligram of solution was dissolved to ethanol and was gradually dropped by 1% FeCl3. The existence of phenol was shown by formed green, red and violet, blue and black sludge [7].

3. Flavonoid

The one milligram of solution was dissolved to ethanol at 900 C and was gradually dropped by 1% FeCl3. The existence of phenol was shown by formed green or dark black sludge [7].

4. Saponin

10 mg of solution was dissolved to 1 ml ethanol and was dropped by NaHCO3. The solution was then stirred for 3 minutes. The existence of saponin was shown by foam formed on the top of solution for long period, i.e 2-4 minutes [4].

5. Tannin

10 mg of extract solution was added to 3 ml of methanol. The solution was then heated at 800C for 5 minutes and was further filtered. The 1% FeCl3 was the dropped to the filtrated solution. The existence of tannin was shown by blackish green sludge [8].

6. Steroid

20 mg of extracted solution was then dissolved to 1 ml chloroform then filtered. Sulfuric acid was further added to the filtered solution. The existence of steroid was shown by brownish ring formed during the reaction [9].

7. Terpenoids

10 mg extracted solution was added to 2 ml chloroform and 1 ml H2SO4. The existence of terpenoids was shown by reddish brown formed during the reaction [10].

3. Result and Discussion

The photochemical characterization is a method to analyze the contained in a chemical solution. The result of photochemical test of Salam stem cortex is shown in the following table. The photochemical characterization of Salam stem cortex showed that there are two compound group which was not found in Salam leaf, i.e tannin and terpenoids whereas steroid and terpenoids was not found in Salam stem.

The image of solution during photochemical test was shown in Figure 1-4.

Table 1. The photochemical characterization of Salam stem cortex

Compound Group	Salam Stem Cortex
Flavonoid	+
Alkaloid	+
Mayer reagent	+
Dragendorff reagent	+
Bouchardat reagent	+
Steroid	+
Tannin	+
Terpenoids	+
Saponin	-
Phenolate	+

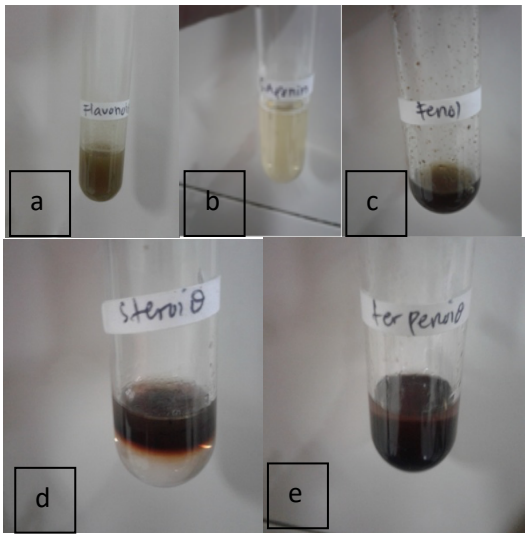

Figure 1. Salam cortex stem solution during photochemical test. Flavonoid (a), Saponin (b), Phenolate (c), Steroid (d) and Terpenoid (e).

4. Conclusion

The photochemical test conclude that the Salam stem cortex (Syzygium polyanthum) contain the secondary metabolic compound group i.e. flavonoid, alkaloid, terpenoid, tannin, steroid and phenolate, excluding saponin compound group.

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