Phytochemical Test and Toxicity Test for Methanol Extract of Belajang Susu *(Scindapsus pictus* Hassk.)

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Phytochemical Test and Toxicity Test for Methanol Extract of Belajang Susu (*Scindapsus pictus* Hassk.)

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Abstract. Plant Belajang Susu (*Scindapsus pictus* Hassk.) is a species of the genus Scindapsus including Araceae family that has long been used by Mambi traditional communities as anti-cancer. Plant that include genus Scindapsus are generally used as ornamental plants, and there are also used as medicinal plants because they contain active compounds and can be anti-inflammatory, analgesic, antioxidant and anti-tumor. Methods used included of extraction or maceration, phytochemical test, fractionation and bioactivity test extract with Brine Shrimp Lethality by using *Artemia salina*. From the results of the phytochemical test it is known that methanol extract of Belajang Susu contain alkaloid and steroid, while toxicity method Brine shrimp lethality test, showed that activity extract methanol Belajang Susu with each LC_{50} value 1,1365 µg mL^{-1}.

Keywords: *Scindapsus pictus* Hassk, toxicity, traditional drug, *Artemia salina*

1. Introduction

Indonesia is one of the countries that is rich in biodiversity. Data recorded by Indonesia has around 30,000 species of plants. Some of these natural resources have been used in daily life to meet the needs of the community as food, medicines, and others [1].

Each plant produces one or more bioactive compounds with certain activities. Plants contain bioactive compounds in the form of secondary metabolites, such as alkaloids, flavonoids, phenylpropanoids, steroids, terpenoids, tannins, and coumarin which are highly dependent on plant species. It causes plants potentially used as medicines [2].

One family of plants that are used as medicinal plants is Araceae. Some plants from this family that are used as traditional medicine such as *Alocasia macrorrhiza* Schott are used as cough medicine, *Acorus calamus* L. is used as a sedative, gastric medicine, and spleen medicine, *Pistia Stratiotes* L. is used as whooping cough medicine, fever and for urination, *Xanthozoma Violaceum* Schott is used as a medicine for boils and *Zantedeschia Aethiopica* (L.) Spreng is used as a medicine for dry cough, influenza cough and also for fever medicine [3].

Belajang Susu (*Scindapsus pictus* Hassk.) is a kind of plant that belonging to the Araceae family and the Scindapsus clan. Generally, members of this clan are used as ornamental plants and also can be used as medicinal plants [4]. Such as *Scindapsus officinalis*, methanol extract contains active compounds which are anti-inflammatory, analgesic, antioxidant and antitumor [5].

Belajang Susu *(Scindapsus pictus* Hassk.) can be used as an anticancer [6]. In addition, this plant is reported to contain oxalate which is usually in the form of calcium oxalate, flavonoid sulfate and a mixture of flavones and flavonol sulfate [5].

Based on the description above, the problem formulated is to investigate the type of secondary metabolites which is contained in methanol extract of Belajang Susu stems *(Scindapsus pictus* Hassk). In this article will reported about bioactivity test, namely the toxicity test of methanol extract of Belajang Susu stem with *Brine Shrimp Lethality Test method.*

2. Research method

2.1. Extraction and fractionation

As much 3.0 kg of *Scindapsus pictus* Hassk was mashed and macerated with methanol. The maserate obtained was filtered using a Buchner filter with Whatman paper and then was evaporated using a rotary evaporator until the methanol extract was obtained and the weight was determined.

Before extraction was fractionated using vacuum liquid colomn chromatography method, the appropriate elluent in fractination process was observed using TLC (Thin Layer Chromatography) then the spot location was detected with UV light, spraying 10% cerium sulfate solution and heated. The same Rf value was merged. The result of fractination was evaporated till dryness.

2.2. Toxicity test with BSLT (Brine Shrimp Letality Test)

One mg of sample in the *Eppendorf* tube was dissolved with 100 µL DMSO then diluted with 150 µL of aquabides. The dilution was taken 200 µL diluted again with 600 µL of aquabides till sample concentration became 1000 µg / mL.

The dilution was then carried out in a microplate with varying concentrations, and the sample volume of each hole was 100 µL triploid. Shrimp, 48 hours old, pipetted as much as 100 µL with some 7-15 shrimp fry, put in a microplate containing samples, then incubated for 24 hours. For control, treatment is the same without using a sample. Furthermore, calculated dead and living shrimp and LC50 were determined [7].

The LC50 value which states the toxicity of each extract is less than 500 µg / mL and 200 µg / mL. This toxicity value is divided into two categories, namely high toxic for LC50 <100 µg / mL and low toxic for LC50> 100 µg / mL [8].

3. Results and discussion

3.1. Extraction and Fractionation

Methanol extract obtained from the maceration of 3.0 kg of *Scindapsus pictus* plant powder weighing 33.7097 g. Methanol extracts which have been analyzed by TLC for the selection of eluents to be used in the KKCV. Initial fractionation was carried out using the KKCV method, obtained by KKCV as many as 37 factions. Fractions 1-37 identified by TLC using n-hexane: ethyl acetate eluents in various comparisons were combined and produced 8 combined fractions.

3.2. Phytochemical Test

The initial test results on the methanol extract obtained were group tests using several types of reagents, namely Liebermann-Burchard, FeCl3 1% reagents, Dragondroff and Wagner. The results can be seen in Table 1.

Table 1. Test results of the methanol extract group

No	Reactor	Observation		Information
1	$FeCl_3$ 1%	Thick green	→ Green	(-) Flavonoid
2	Liebermann-Burchard	Thick green	→ Brownish green	(+) Steroid
3	Dragondroff	Thick green	→ Reddish brown deposits	(+) Alkaloid
4	Wagner	Thick green	→ Brown deposits	(+) Alkaloid

3.3. Toxicity with BSLT (Brine Shrimp Letality Test)

Toxicity test for Artemia salina shrimp or BSLT (Brine Shrimp Letality Test) polar fraction *of S. pictus Hassk.* plants can be seen in Table 2.

Table 2. The result of the test of shrimp larvae (*Artemia salin* Leach.) on the methanol extract of Belajang Susu (*S. pictus* Hassk).

[sample] (ppm)	X Axis (log [sample]	Mortaluty	Sample Life	Death Percentage of Shrimp Larvae (%)	Y Axis (Pobit Value)
1	0.00	8	22	27	4.39
10	1.00	11	19	37	4.39
100	2.00	30	0	100	0

The results of the graph of the relationship between logs (samples) on the probit value of methanol extracts of plants *S. pictus* Hassk. can be seen in Figure 1.

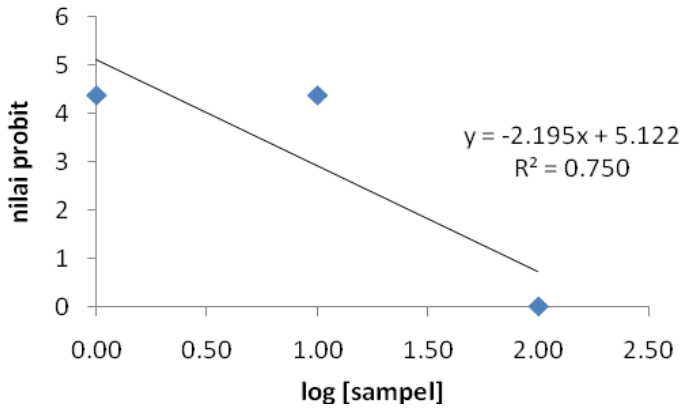

Figure 1. Graph of the relationship between log (sample) and the probit value of the methanol extracts of plants *S. pictus* Hassk

Based on the picture, for LC50 (X), the probit value is 5 (y), entered the regression equation

$$y = -1.760\ x + 4.173$$

$$\frac{y - 5.122}{-2.195} = x \quad (1)$$

$$\frac{5 - 5.122}{-2.195} = 0.0556 \quad (2)$$

$$\log x = 0.0556$$

x = antilog 0.0556
= 1.1365 ppm

LC_{50} sample BSLT 1 is = 1.1365 ppm
So, LC_{50} for methanol extract of *Scindapsus pictus* Hassk plant against *Artemia salina* Leach shrimp larvae was 1.1365 µg / mL which was included in the category of high toxic. The LC_{50} value which states the toxicity of the extract is less than 500 µg / mL and 200 µg / mL. This toxicity value is divided into two categories, namely high toxic for LC_{50} <100 µg / mL and low toxic for LC50> 100 µg / mL (Anderson, 1990).

4. Conclusion

Based on the results, it can be concluded that the phytochemical test results extract methanol of Belajang Susu contain alkaloid and steroid compounds, whereas from the results of toxicity test with Brine Shrimp Lethality Test method, the activity of methanol extract of Belajang Susu stems with LC_{50} value is 1.1365 µg / mL. Further research is needed about the chemical content and the nature of the activity of *Belajang Susu* (*S. pictus* Hassk).

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Finally, we hope that the results of this research activity can be useful both in the development of science and references for the community so that they can use the *S. pictus* Hassk plant more.

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