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Identification Phytochemistry Compounds of Batak Onion, Noni Leaf and Extract God's Crown Fruit

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***Abstract*—** *Batak onion usually used as spice in batak cuisine meanwhile noni leaf and God's crown used as traditional herbs medicine. These plants are easily found in North Sumatra. Aim of this research is identification and compare phytochemistry compound of batak onion, noni leaf and God's crown. Each samples extraction using 96% ethanol of maceration method. Then do phytochemical screening of active compounds that are contained in the samples. Result of study showed that batak onion and God's crown fruit have higher antioxidant than noni leaf.*

***Keywords*—** *Batak onion, Noni leaf, God's crown.*

I. INTRODUCTION

Batak onion or *Allium chinense* known as spices for batak cuisine and reported have intense antioxidant (Sinaga, 2016). *A. chinense* has anti-inflammatory, anti-proliferation activity and reported potentially being anti-tumor (Wang, 2016).

God's crown or *Phaleria macrocarpa (Scheff.) Boerl* is traditional medicine that often used to treat disease and has antioxidant, antimicrobial and anti-inflammatory activity (Hendra, 2011).

Morinda citrifolia L., as known as Noni are famous for healing wounds and even burns. The leaf use for immune support, high blood pressure and has antioxidant and anti-inflammatory activity (Chen Su, 2010).

Antioxidant activity can inhibit and prevent oxidative damage (Parapaga, 2018). Antioxidant also can suppress free radicals and protect cell from oxidative stress (Oktaria, 2019).

The purpose of this research is to identification and comparing phytochemical compounds of batak onion, noni leaf and God's crown.

II. RESEARCH METHODS

This research was conducted in the Faculty of Mathematics and Natural Sciences, University of North Sumatra for 1 month starting from October - November 2019.

Tools used: analytical balance, laboratory glassware, blender, incubator, oven, rotary evaporator, water bath. The materials are batak onion, noni leaf, God's crown fruit, aquades, 96% ethanol. Phytochemical identification using Dragendorff, Mayer, Bouchardat, Molish and Liebermann-Burchard reagent, Hydrochloride acid, Magnesium powder, amyl alcohol, $Pb(CH3COO)_2$, H_2SO_4, chloroform, isopropanol, $FeCl_3$.

2.1. Preparation to Powdered Materials

Wash batak onion bulbs, noni leaf and God's crown fruit with flowing water. Slice thinly the batak onion bulbs and cut the God's crown fruit into small pieces. Dry three of this sample in drying cabinet at 40^0C for 7 days. After that, blend the sample until delicate into powder. Then put into tightly sealed container and store it in dry place and avoid sun-light.

2.2. Ethanol Extraction

Put 500 grams powdered materials into container then macerate it with 96% ethanol for 5 days, avoid sun-light and often stir it. Filter the product and left it for 2 days then evaporate with rotary evaporator at 70^0C. Evaporate again the filtrate with water bath until the extract become viscous.

III. PHYTOCHEMICAL SCREENING

3.1. Detection of Alkaloids

Dissolve 0.5 grams aqueous extract in 1 ml hydrochloride acid 2 N and 9 ml water. Boil in 2 minutes and let it cool then filter it.

a. First test tube: Add 0.5 filtrate and 2- drops of Mayer's reagent. Alkaloids give a cream precipitate.
b. Second test tube: Add 0.5 filtrate and 2-drops of Bouchardat's reagent. Alkaloids give a brown precipitate.
c. Third test tube: Add 0.5 ml filtrate and 2-drops of Dragendorff's reagent. Alkaloids give an orange precipitate.

3.2. Detection of Flavonoids

Boil 10 grams aqueous extract in 10 ml water for 5 minutes and filter it. Add 0.1 Magnesium, 1 ml hydrochloride acid and 2 ml amyl alcohol to filtrate and stir it. A red or yellow color on amyl alcohol layer indicated of positive test for flavonoids.

3.3. Detection of Saponins

Dissolve 0.5 grams aqueous extract with 10 ml distilled water, wait a moment and shake vigorously. Foam formed as high as 1-10 cm and stable for 10 minutes; indicated presence of Saponins.

3.4. Detection of Glycosides

Mix 3 grams of aqueous extract with 30 ml mixture of 96% ethanol and water (7:3). Add 10 H_2SO_4 2 N and reflux in 1 hour, wait a moment and filter it. Stir 20 ml filtrate and 25 ml $Pb(CH3COO)_2$ 0,4 M, wait for 5 minutes and then filter it.

Then filter it 3 times, after that mix 20 ml mixture of chloroform and isopropanol (3:2) in each filter process.

Evaporate 0.1 ml of filtrate then add 2 ml water and 5-drops of Molish's reagent. Carefuly add 2 ml H_2SO_4 from wall of test tube. Formation of a red or violet color at the interphase of the two layer is indicates the presence of glycosides.

3.5. Detection of Tannins

Boil 1 grams of aqueous extract in 100 ml water for 3 minutes, wait a moment and filter it. Add 2-drops of 1% $FeCl_3$ reagent of 2 ml of filtrate. The dark blue or dark green color of solution demonstrated positive test for Tannins.

3.6. Detection of Steroids and Triterpenoids

Macerate 1 grams of aqueous extract with 20 ml n-hexsan for 2 hours and then filter it. Evaporate filtrate then give a few drops Liebermann-Burchad reagent. Color change from blue or dark green indicates the presence of steroids otherwise positive test for triterpenoids if demonstrate a red, pink or violet coloration.

IV. Result and Discussion

4.1. Phytochemical Screening of Ethanol Extract of Batak Onion, Noni Leaf and God's Crown

A phytochemical analysis is one way to determine the secondary metabolite content of plant sample.

TABLE 1. Qualitative phytochemical screening results

Content	Batak Onion	Noni Leaf	God's Crown
Alkaloids	(+)	(+)	(+)
Flavonoids	(+)	(+)	(+)
Saponins	(+)	(−)	(+)
Tannins	(−)	(+)	(+)
Glycosides	(+)	(−)	(−)
Steroids/ Triterpenoids	(−)	(−)	(−)

Description: (+): contain classes of compounds;
(−): does not contain classes of compounds.

Ethanol extract of batak onion, noni leaf and God's crown fruit contains alkaloids and flavonoids compounds. Saponins were present in batak onion and God's crown while tannins were present in noni leaf and God's crown fruit. Glycosides were present only in batak onion. Steroids/ Triterpenoids were absent in all of these plants.

The rule for choosing solvent to extraction is like disolves like. Polar solutes are more soluble in polar solvents and otherwise.

Polar compounds such as flavonoids, saponins, glycosides, and tannins can bind by ethanol solutions while steroids/ triterpenoids compounds are non-polar. Ethanol is the safest and more effective way to bind these phytochemical compounds (Gberikon, 2015).

Alkaloids often use for medical sector for antibacterial even being repellent. Flavonoids such as CYP3A as activity inhibitors also able to acts as free radical scavenger, tannins can directly bind to free radicals and toxic metabolites of drugs and saponins serve as antibacterial and anti-fungi (Hassanin, 2013).

V. Conclusion

Batak onion and God's crown have higher antioxidant activity than noni leaf. Alkaloids and flavonoids were detected in all of these plants. Saponins were contains in batak onion and God's crown fruit while tannins present in noni leaf and God's crown fruit. Steroids/ triterpenoids compounds were absent in all of these plants.

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