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PARTIAL CHARACTERIZATION OF CONNARUS SEMIDECANDRUS JACK (POLIPOG) LEAVES, BARKS AND ROOTS

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ABSTRACT

This study tested the physical characteristics and determined the active component of Connarus semidecandrus Jack (Polipog) leaves, bark, and roots. The step by step process was collection of samples, weighing, washing, decoction, filtration, test for physical characteristics and detection of active component of Polipog tree. Some several test such as odor, color, pH, density, solubility, and boiling point, Alkaloid screening, confirmatory test for Alkaloid, Triterpene and ∞-benzopyrene (flavonoid) screening test were done.

The physical properties of Polipog leaves, barks and roots were: colors of the Polipog leaves were green, odor was unpleasant, 6.0 pH which is slightly acidic, 0.85 density, immiscible to benzene, chloroform, oil but miscible in water. The color of Polipog roots was yellow orange, odor was pleasant, 6.0 pH which is slightly acidic, 0.96 density, immiscible to benzene, chloroform, oil but miscible in water. The color of Polipog roots was red orange, odor was pleasant, pH was 7.0,

which is neutral, 0.86 density, immiscible to benzene, chloroform, and oil but miscible in water.

Finding showed that among the secondary metabolites triterpene, and (flavonoid) ∞-benzopyrene were present through phytochemical screening of polipog leaves, barks and roots decoction, but negative for alkaloid metabolites.

The researcher recommends further study of the chemical properties and other active components of Connarus semidecandrus Jack (Polipog) leaves, barks, and roots.

Introduction

One important part of our ecosystem is plant. It plays an important role on human beings. Plants grow everywhere, particularly in places where in air is composed of those elements that make plants its life cycle. There are various classes of plants that make one different from another.

As science and technology evolved, different kinds of medicines were discovered. At present, there are many kinds of medicine which are widely used in hospitals, Barangay Health centers, homes and even for commercial purposes. Most of them, however, contain chemicals hazardous to human health, aside from its expensive value. This study aims to look fr an alternative source of producing quality medicines to cure illness.

The Polipog tree is newly discovered plant which is known to cure illness. There are some studies that have been conducted that shows the effectiveness of this plant and has been proven

to have the capacity to cure diseases such as diabetes. The researcher believes that through the discovery of this plant, other characteristics of Polipog tree can be revealed that might have some medicinal uses other than treating diabetes. Through this study, the researcher aims to study the Polipog tree and see if there are some parts of this plant that would be used to cure and prevent some other illness.

Statement of the Problem

This study determined the Partial Characterization of *Connarus semidecandrus* Jack (Polipog) leaves, barks, and roots. Specifcally, thus study aimed to answer the following questions:

1. What are the physical properties of the decoction erms of the leaves, barks and roots of Polipog tree in terms of:
   a. Odor
   b. Color
   c. Ph
   d. density
   e. solubility, and
   f. boiling point
2. What are the active components present in the decoction of the leaves, barks and roots of Polipog tree?

METHODOLOGY

Locale of the Study

This research entitled Partial Characterization of *Connarus semidecandrus* Jack (Polipog) was conducted at the Department of Science and Technology (DOST), University of Eastern Philippines, Catarman N. Samar. Polipog tree parts was collected from Brgy. San Juan, Mondragon N. Samar.

Research Design

The experimental method of research was used in this study. Experimental method of research is the only method of research which can only truly test the hypothesis concerning causes and effect relationship (Gay, 1976). Gay further said that the experimental method represent the most valid approach to the solution of problems, practical and theoretical. Since the study is concerned with partial characterization of *Connarus semidecandrus* Jack (Polipog) tree in Brgy. San Juan, Mondragon, Northern Samar, the experimental method of the research is the most appropriate method to use.

Laboratory Test

A. Collection of Samples

Fresh Polipog (leaves, bark and roots) was collected from Brgy. San Juan, Mondragon Northern Samar by handpacking. Twenty-

five (25) grams of each part with 100mL of water was prepared for decoration process to obtain 50mL decoted sample.

B. Preparation of leaves, bark and roots of Polipog decoration

First, the leaves, bark and roots of Polipog were collected, weighed 25g each and then washed. It was followed by boiling for about 30-40 minutes. After boiling the sample was transferred to a beaker. The decoction was filtered. After filtration process, the filtrate was collected and subjected for the physical properties and secondary metabolites screening.

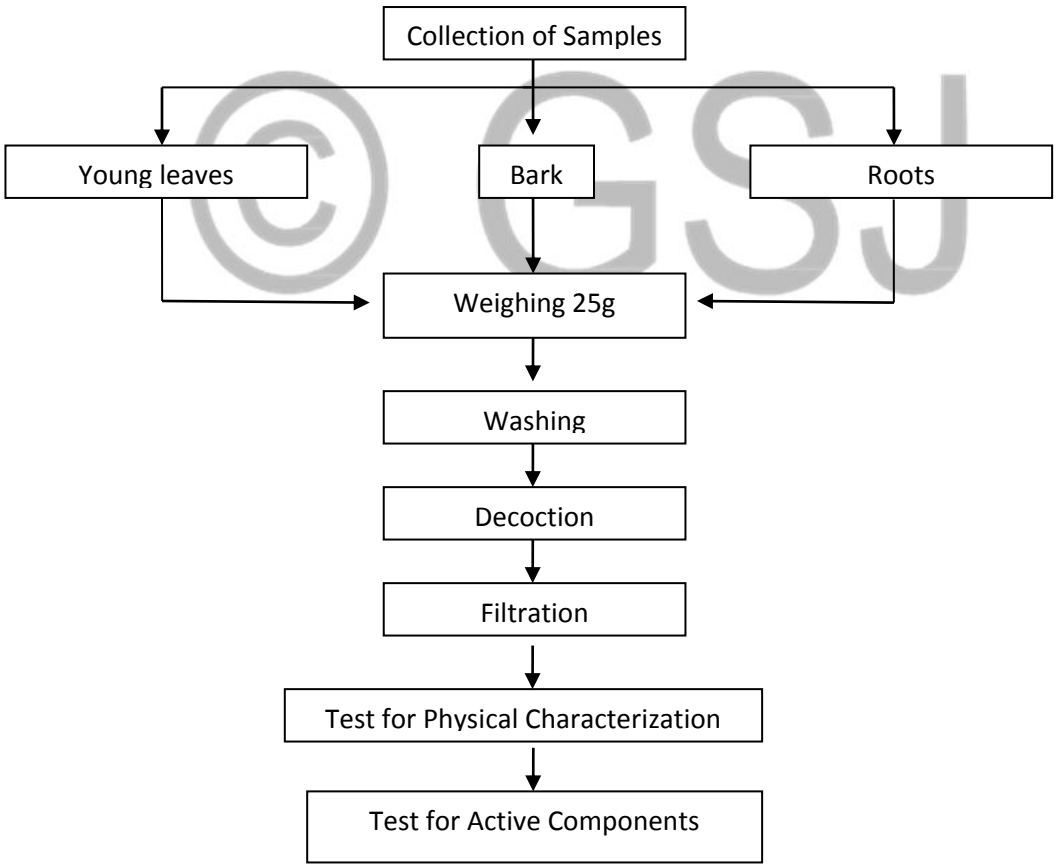

Figure 1. Preparation of Polipog Parts for Decoction

C. Decoction of Leaves, Bark and Roots of Polipog

The selected parts of the Polipog plant were placed into the beaker for the decoction with 100mL of water and boiled for 30 – 40 minutes.

D. Partial Characterization Analysis

I. odor

The Polipog decoction formulation was inhaled by wafting the air above the mixture. The odor of the formulation was noted.

II. color

The color of the Polipog decoction formulation was observed with the naked eye. The result will be noted.

III. pH

About 5mL of the Polipog decoction formulation was placed in a 250mL beaker. The pH ws tested by dipping the pH paper to the sample and determine its reading.

IV. density

The density was determined by weighing 5mL of the decoc sample and then dividing the weight in grams by the volume in mL, using the formula, **D = M/V**

Where : D = Density

M = Mass

V = Volume

V. solubility

To test the solubility of Polipog decoction, 2mL each of the decoction was placed in 12 separate test tubes. 3mL each of the following solvents was added: Chloroform, Benzene, Oil and Water. The solubility of the samples on different solvents was observed.

VI.boiling point

To test the boiling point of Polipog decoction, before boiling, the temperature of the sample was recorded, as the initial temperature. After that the sample was boiled and the temperature recorded again. To get the boiling point of the sample, the initial temperature was subtracted from the final temperature.

E. Test for the Presence of Alkaloid

In this test, the Dragendoff's and Mayer's reagents were used in determining the presence of Alkaloid. A positive result indicates the presence of orange precipitate in Dragendoff's reagent and a white precipitate with the Mayer's reagent. A 20mL of Polipog decoction was taken in an evaporating dish.

It was evaporated to syrupy cinsistency over steam bath. A 5mL of 2M HCI was stirred over a steam bath for about 2 minutes and was cooled then filtered and the filtrate divided into two portions. One portion was tested with the Dragendorff's reagent

and then the other was tested with Mayer's reagent. The results obtained were recorded.

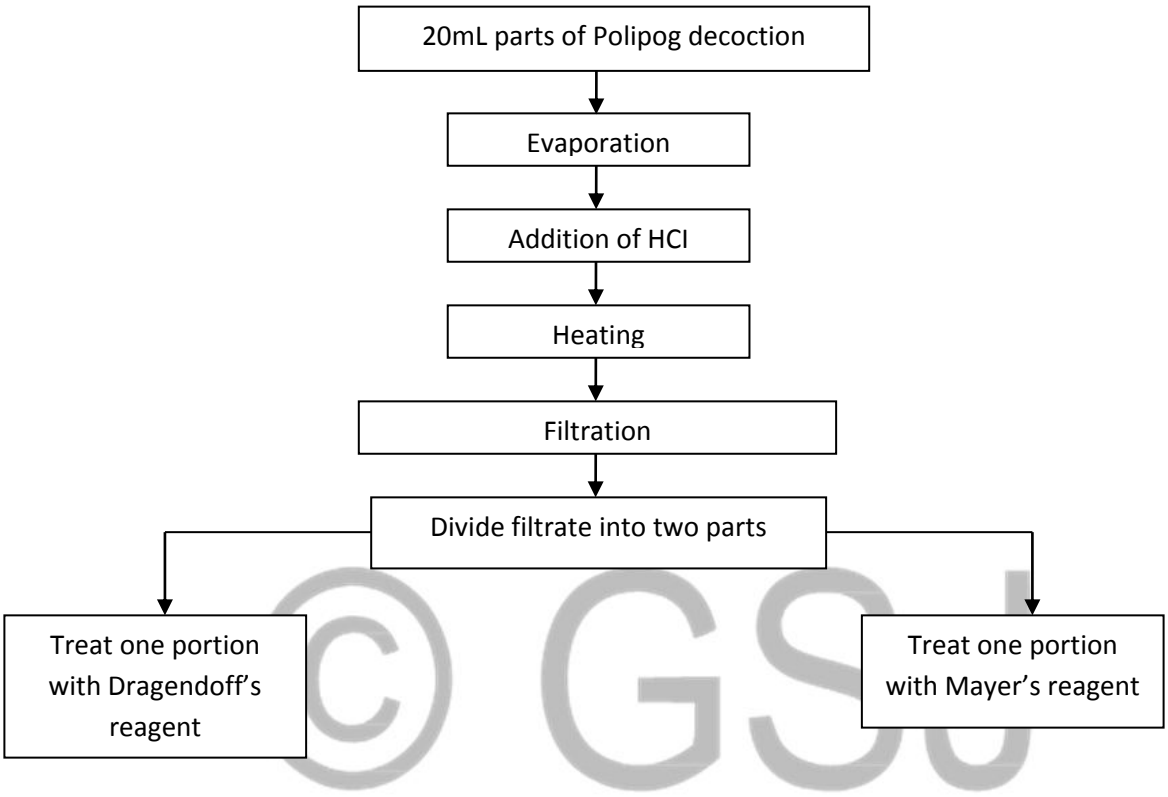

Figure 2. Alkaloid Screeing

F. Confirmatory Test for alkaloid

This test was attempted to confirm the presence of primary, secondary, and tertiary alkaloids. The remaining 3 mL filtrate was added drop wise enough 28% ammonia until the solution was alkaline in litmus. The alkaline solution was extracted 3 times in small portion of less than 10 mL chloroform. The lower chloroform extract was combined and reserved the aqueous layer. The chloroform extract was evaporated to dryness under the hood

and over the water bath. The residue with 5 mL of 2M HCl was stirred over a steam bath for about 2 minutes and was cooled then filtered and divided the filtrate into two portions. One portion was tested with the Dragendorff's reagent and then the other was tested with Mayer's reagent. The results obtained were recorded.

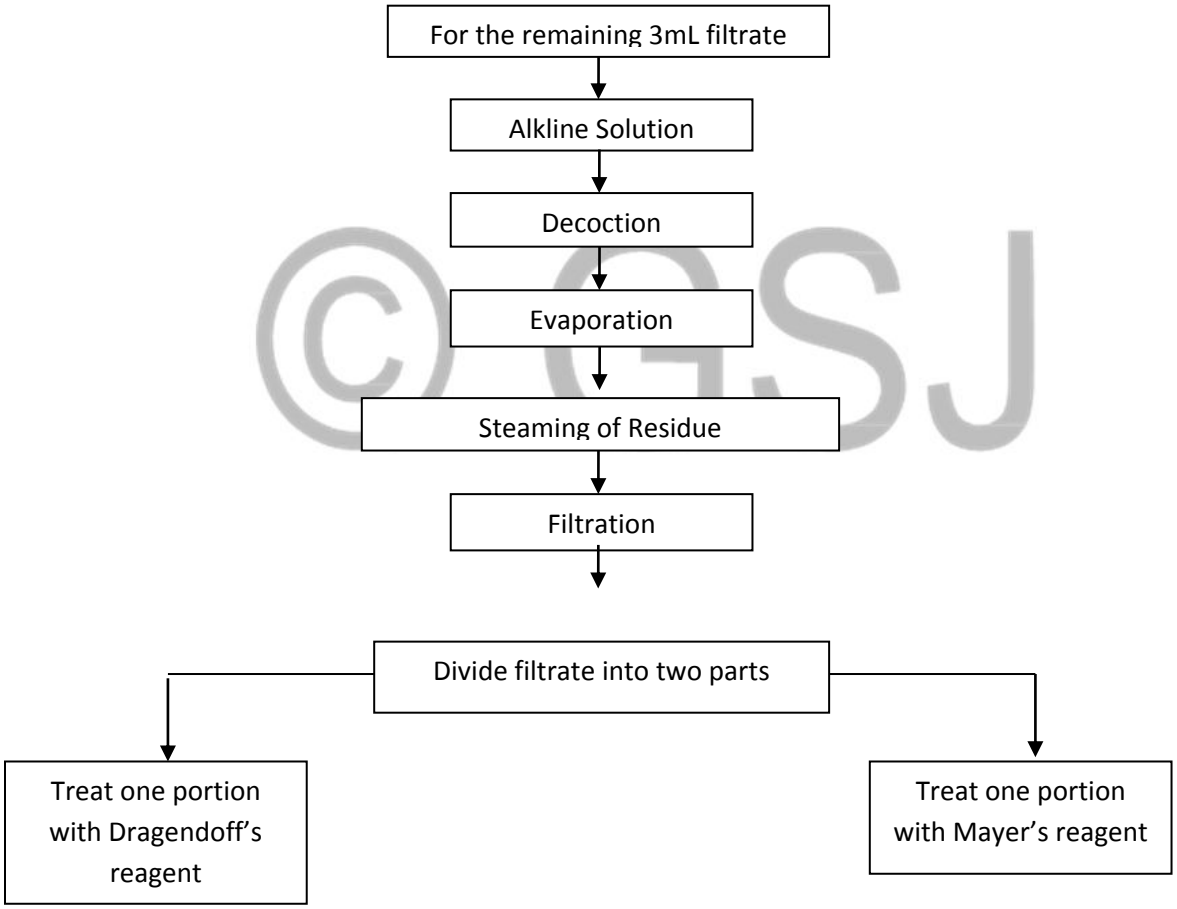

Figure 3. Confirmatory Test for Alkaloid

G. Test for the Presence of Triterpenes

The Libermann-Burchard was used to test for the presence of triterpene. A range of color from blue to green, red pink, purple, or violet indicates the presence of triterpene. This test was done by evaporating to incipient dryness over a steam bath the extract of 30g of Polipog. It was cooled to room temperature before defatting with 12 mL hexane and 6 mL water. The test tube was shaken gently and the upper hexane layer pipette out. This treatment with hexane was repeated until most of the colored pigments removed. The hexane was discarded properly. The aqueous layer was treated with 10 mL chloroform extract pipette out. The chloroform extract was dried by filtering through about 100 mg anhydrous solution of sodium sulfate held over the dry filter paper. The filtrate was divided into two (2) portions. One portion was used as control. The other portion was treated with three (3) drop of acetic anhydride and the one (1) drop of concentrated sulfuric acid. It was observed for any immediate color change. It set aside for an hour and observed for further color changes. It was compared with the control and the result was recorded.

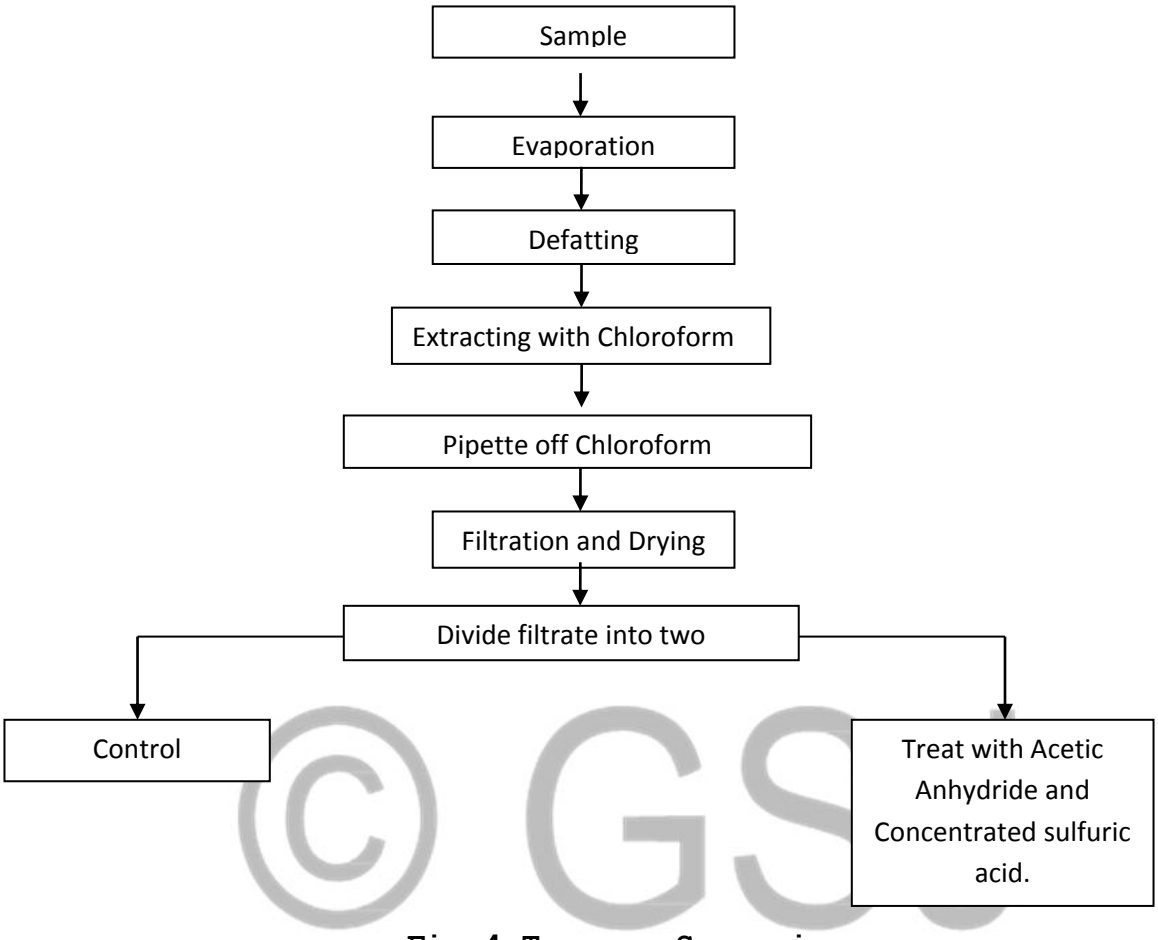

Fig.4 Terpene Screening

H. Test for Presence of ∞- benzopyrene (Flavonoid)

Wilstatter "cyaniding" test was used to detect the presence of this compound. Colors ranging from orange to red, to crimson and magenta and occasionally, to green or blue may be observed. Another portion of alcohol filtrate was taken and treated separately with 0.5 mL concentrated hydrochloric acid (12M). A 3-4 pieces of about 1 cm of magnesium ribbon was added and the change of color was observed after 10 minutes. It was

compared with the control tube. An equal volume of water and 1 mL octyl alcohol was added when definite coloration occurred. It was shaken and was allowed to stand. The color in each layer was noted and the result was recorded.

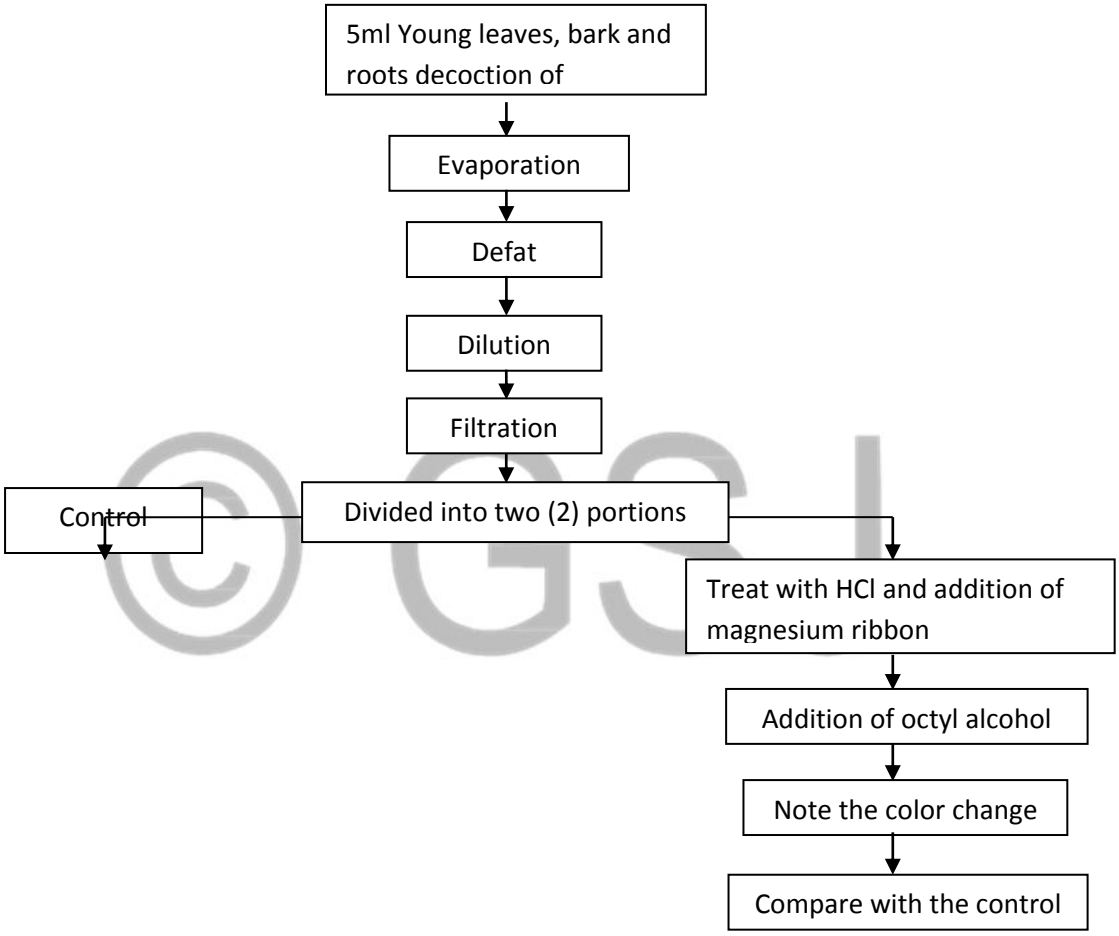

Figure 4. ∞-benzopyrene Screening

Results and Discussions

The Physical properties under studies shows that the Polipog Leaves has intense green color. On the other hand Polipog barks has yellow orange color, and each roots has red

orange color, However the leaves has unpleasant odor while bark and roots have pleasant odor. As far as pH of Polipog leaves is concerned based on the result of the three trials, Polipog leaves and barks have a mean pH of 6.0 and Polipog roots has 7.0 which means that the decoction of leaves and barks are slightly acidic while the roots decoction is neutral .

In terms of comparison of density between trials 1-3 of Polipog leaves, barks and roots, the decoction of leaves has a mean density of 0.86. Moreover the decoction of barks and roots have densities a mean of 0.96 and 0.86 rspectively. It implies that the Polipog barks decoction is denser compare to the decoction of leaves and roots.

The young leaves , barks and roots are immiscible(Non-polar) in benzene, oil and choloroform but miscible(Polar) in water. This implies that “like dissolve like” that only polar liquid solute can dissolve in polar lquid solvent.

Furthermore, the boiling point of the three samples (young leaves, barks and roots of Polipog decoction has a mean boiling point of 47.67 °C, 52.3 °C and 56 °C, respectively.

Moreover, findings showed that among the secondary metabolites, triterpene and flavonoid were present in the decoction of leaves, bark and roots however alkaloid metabolite was not evident.

Conclusions

Based on the findings of this study, the researcher arrived at the following conclusions:

1.) Triterpene and (flavonoid) ∞-benzopyrene are the present in the decoction of leaves, bark and roots of *Connarus semidecandrus* Jack plant gathered from San Juan, Mondragon Northern Samar. Therefore, based on the findings the research hypothesis is accepted that there is active component present in the decoction of Polipog leaves, bark, and roots.

2.) The secondary metabolite that was not positive in the leaves, bark and roots of Polipog in San Juan, Mondragon Northern Samar is the Alkaloid.

Recommendation

Based on the results and conclusions, the researcher recommends the following:

1) Test the Polipog for effects on other ailments and illness, like hyperchloresteremia (but using a large specimen).
2) Perform further study on secondary metabolites present using other method of screening to negate or affirm the present study.

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