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Classroom Experiments using Phytochemical Analysis of Weed (*Eleusine Indica*)

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ABSTRACTS

This study aimed to demonstrate simple classroom experiments by evaluating the phytochemical components of the extracts of weed (*Eleusine indica*). The purpose of this study is also to contribute effective use of natural resources in the locality by transforming traditional knowledge to the scientific way of using the medicinal plant to be used as raw materials in pharmaceutical industries. The weed was air-dried for ten days. It was then pulverized using an electric blender. The mixtures were allowed to stand for seventy-two hours to extract the bioactive components of the weed. The experiment used chloroform (polar) in extracting the secondary metabolites present in the weed. The mixtures were then filtered with a cheese cloth and concentrated in direct heat using a hot plate. The extract was placed in a beaker and was labelled as chloroform extract. The bottle was covered tightly to prevent evaporation of the solvent. The Phytochemical components present in the weed extracts were alkaloids, flavonoids, carbohydrates, diterpenes, and saponins. This study is expected to be one of the teaching model (since the experiments are simple). This study also is expected to identify the phytochemical components of weed, identify the phytochemical components of weed, and contribute to the effective use of natural resources.

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1. INTRODUCTION

Paragis tea that is made from the weed (*Eleusine indica*) is one of the herbal medicines that are proven to cure major ailments (Desai *et al*., 2017). This weed is a botanical plant that has been used by the Ibibios of Southern Nigeria in the treatment of malaria and as a tonic (Ettebong & Nwafor, 2015; Tiwari *et al.*, 2011). Paragis tea is found to be anthelmintic, diuretic, diaphoretic, and febrifuge. Studies particularly showed that it contains these important properties:

(i) Anti-inflammatory
(ii) Antibacterial
(iii) Anticonvulsant
(iv) Antidiabetic
(v) Antileishmanial
(vi) Antioxidant
(vii) Antiplasmodial
(viii) Cytotoxic
(ix) Pancreatic lipase inhibitory
(x) Phytoremediation

The plant is used for deforming, removing or decreasing cough, lung troubles, heart problems, high blood pressure, spleen, liver complaints, bladder, and kidney stones (Desai *et al*., 2017; Ng *et al*., 2004). The ethanolic weed extract was used as an anti-diabetic and malarial remedy in the Niger Delta region of Nigeria. The weed could be an alternative to solve the problem of green roughage scarcity in Nepal (Oyedeji *et al.*, 2013).

The purpose of this study is to contribute effective use of natural resources in the locality by transforming traditional knowledge to the scientific way of using the medicinal plant to be used as raw materials in pharmaceutical industries (Ettebong & Nwafor, 2015). Specifically, this study aimed to answer: What phytochemical components are present and absent in this weed?

2. METHODS

Figure 1 shows the general procedures of the study. The weed was air-dried for ten (10) days. It was then pulverized using an electric blender. The mixtures were allowed to stand for seventy-two (72) hours to extract the bioactive components of the weed. The experiment used chloroform (polar) in extracting the secondary metabolites present in the weed. The mixtures were then filtered with a cheese cloth and concentrated in direct heat using a hot plate. The extract was placed in a beaker and was labelled as chloroform extract. The bottle was covered tightly to prevent evaporation of the solvent. The procedure of Tiwari *et al*., (2011) for the analysis of phytochemical components of the extracts (chloroform) was then employed (Ettebong & Nwafor, 2015; Devappa *et al.*, 2011).

3. RESULTS AND DISCUSSION

The main idea for this study was to understand the phytochemical analysis of weed (*Eleusine Indica*). Several analyses were done, and the procedure is presented in **Figure 1**. Understanding the phytochemical properties of the weed is important for further analyses and utilization of this weed.

Table 1 shows the phytochemical components which are present and absent in the weed extracts. The phytochemical components present in the weed extracts were alkaloids,

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carbohydrates, diterpenes, flavonoids and saponins while the other components such as tannins, phenols, phytosterols, anthraquinone glycoside, and proteins are absent.

Out of ten (10) components tested, half of these resulted positive and the other half resulted negative. The results of this study having a positive result with alkaloids and a negative result with proteins, phytosterols, anthraquinone glycosides, and phenols also resulted in the same with the study of Desai *et al*., (2017).

The presence of these phytochemical components in the weed implied its potential and pharmacological importance. The results of the phytochemical test were also added to the data bank of medicinal plants using chloroform as solvent. It also contributed to the effective use of natural resources in the locality by transforming traditional knowledge to the scientific way of using the medicinal plant for they may use the information from this study to treat themselves with home-grown medicinal plants (Gupta *et al.*, 2012).

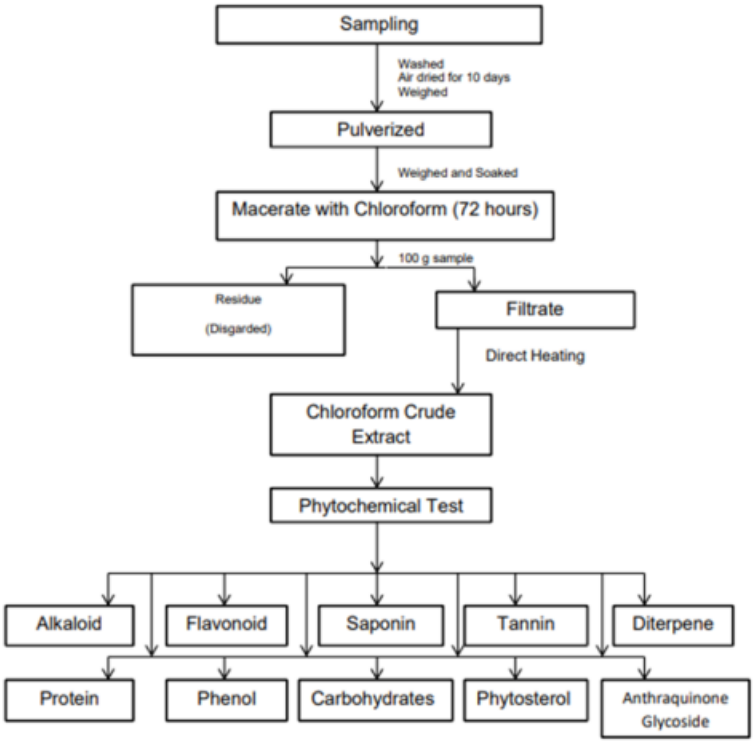

Figure 1. General schematic diagram of the study.

Tabel 1. Phytochemical Components of Weed (*Eleusine indica*).

Phytochemical	Chloroform
Alkaloids	(+)
Carbohydrates	(+)
Diterpenes	(+)
Anthraquinone Glycosides	(-)
Proteins	(-)
Tannins	(-)
Phenol	(-)
Flavonoids	(+)
Saponins	(+)
Phytosterols	(-)

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4. CONCLUSION

The Phytochemical components present in the weed extracts were alkaloids, flavonoids, carbohydrates, diterpenes, and saponins, but anthraquinone glycoside, proteins, tannins, phenols, and phytosterols were absent (**Table 1**). Therefore, the result of the phytochemical screening of weed extracts is half positive and the other half of the components resulted negative. Since the experiments are simple, this can be used for classroom teaching. This research is expected to identify the phytochemical components of weed, identify the phytochemical components of weed, and contribute to the effective use of natural resources.

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6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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