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PRELIMINARY PHYTOCHEMICAL SCREENING OF CRUDE EXTRACTS OF *GLIRICIDIA SEPIUM, TECTONE GRANDIS AND HEVEA BRACILLIENSI* TREES

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ABSTRACT
The roots, barks, seeds and leaves of *Techtona grandis, Gliricidial sepium* and *Hevea bracilliensis* were analyzed for their photochemical components (carbohydrate (sugar), tannins, phlobatannins, alkaloids, glycosides, saponnins, sterol and flavonoids). Each plant parts were extracted by soaking in water, ethanol and carbon tetrachloride for 36h. The crude extracts obtained were analyzed for their components using standard methods. Results revealed in water, indications of presence of tannins, phlobatannins, alkaloids, glycosides, saponnins, flavonoids and carbohydrate (sugar), sterol was absent. In ethanol extract, only phlobatannins was present in all the samples except in seeds of teak, saponnins was absent in all the samples and all other components were sparsely present. Finally, in carbon tetrachloride extract, phlobatannins, glycoside, flavonoids and carbohydrate (sugar) were absent. The results indicated that water extracts of these trees could be used as natural products for local therapeutic applications

KEYWORDS: Gliricidia, teak, rubber, phytochemistry, extracts, therapeutic applications

INTRODUCTION

In Nigeria, gliricidia, teak and rubber are useful to the nation because they serve as source of income, animal and human source of food, for building houses, bridges etc. their plantations are cited in specific tows and states. The trees grow to large sizes, tall heights, large girths and seeds are in pods. When matured and dry, the pods break by explosive mechanism to expose the seeds. Generally the trees survive and grow well under a wide range of climatic and adaptic conditions. The made of propagation is usually by seeds, layering and cuttings

Entire parts of trees-barks, roots, leaves etc have been reported to be useful ethano medically (Faruq *et al* 2004). Aqueous and organic extracts of plants have been used as wound-dressing, treatment of dysentery, mosquitoes repellant, fumigants (Hazzan *et al* 2004), antibacterial, antifungi, antiviral, CNS depressant (Jain *et al* 1997; Olafimihan 2004). Plants parts have been a source of herbal medicine which has been shown to be effective and about 80% of populations depend on their use as primary health care (Akinyemi 2000; Omojasola and Awe 2004). Induced compounds have been found to accumulate in storage organisms of many plants. Antimicrobial compounds occur in the outer tissues of many storage organs such as glucoalkaloids in potato tubers (Fagbohun *et al* 2004).

Phytochemical screening is a method which exposes or revel certain components or properties readily available in plants for bio-activity or ethno-medical applications. The relevance of screening is in the formulation of drugs and other ethanomedical constituents for the cure of illnesses and other applications (Agoha 1976). The aim of this study is to identify the phytochemical components of *Gliricidia sepium*, *Tectona grandis* and *Hevea bracilliensi.*

MATERIALS AND METHODS

The samples (*Gliricidia sepium* (gliricidia), *Tectona grandis* (teak) and *Hevea bracilliensi* (rubber) were collected from Federal College of Agriculture, Akure campus in August 2006 and identified at the Horticultural section of Federal College of Agriculture. The samples were separated into roots, barks, rinsed in distilled water,

dried in oven at 100^0C, ground, sieved (40mm mesh), stored in clean bottles at ambient temperature prior to extraction and labeled (G1, G2, G3, G4, R5, R6, R7, R8 and T9, T10, T11, T12) extractions were carried out using water carbon tetrachloride and ethanol. The procedure followed thus: 5g of each sample was extracted in 60Cm3 of each of the solvents in conical flasks for 36h. The extraction were shaken repeatedly after 36h the solutions were filtered using sterile whatman No 2 filter paper and stored in clean bottles at ambient temperature prior to analysis.

Table 1: Phytochemical analysis of the extracts of roots, barks, seeds and leaves of gliricidia, teak and rubber in water

Parts	Code	Tannins	Phlobatannins	Alkaloids	Glycosides	Saponnins	Sterol	Flavonoids	Carbohydrate
Gliricidia									
Barks	G1	+	+	+	-	+	-	+	+
Roots	G2	+	+	+	-	+	-	+	+
Seeds	G3	+	+	+	+	+	-	+	+
Leaves	G4	+	+	+	-	+	-	+	+
Rubber									
Barks	R5	-	-	+	-	+	-	-	-
Roots	R6	-	-	-	-	+	-	-	-
Seeds	R7	+	+	+	+	+	-	+	+
Leaves	R8	+	+	+	+	+	-	+	+
Teak									
Barks	T9	+	+	+	-	+	-	-	+
Roots	T10	+	-	-	-	+	-	-	-
Seeds	T11	+	+	+	+	+	-	-	-
Leaves	T12	+	+	+	-	+	-	-	-

+ = Present, - = Absent

The extracts were evaluated for tannins, phlobatannins, alkaloids, glycosides, saponnins, sterols, flavonoids and carbohydrates (Hassan *et al* 2004).

a. Tests for carbohydrates

Molisch's test
A few droops of Molisch reagent was added to each extract in test tubes. 1ml of H_2S0_4 was added slowly down the side of tube so that the acid forms layer between aqueous solution without mixing with it. On addition of Molisch reagent brown or reddish brown ring was observed at the interphase of solution on addition of H_2S0_4.

Fehling's test (test for free reducing sugar)
Soil of mixture of equal volumes of Fehlings solution A and B was added to 2ml of each extract in test tubes. The resultant mixture was boiled for a minute. A brick-red precipitate of copper oxide was regarded as evidence of sugar.

b. Test for alkaloids
Acidified solutions of the extracts were used for the tests, 1ml of 1% HCl was added to 3ml of each extract in test tubes. Portions of each extract were treated with few drops of Mayer's reagent. A reddish brown precipitate

was regarded as evidence of the presence of alkaloids.

c. Test for tannins
Two drops of 5% $FeCl_3$ was added to 1ml of each extract. A dirty green precipitate was observed indicating presence of tannins.

d. Test for glycosides
10ml of 50% H_2S0_4 was added to 1ml of each extract in a test tube. The mixture was heated in boiling water for 15mins. 10ml of Fehling's solution (5ml each of solution A and B) was added and the mixture boiled. A brick red precipitate indicated the presence of glycosides.

e. Test for saponnins
Frothing test
2ml of each extract in test tubes was shaken for 2minutes. Frothing was indication of saponnins.

f. Test for sterols
1ml of concentrated H_2S0_4 was added to 1ml of each extract. A red coloration was an indication of presence of sterols.

Table 2: Phytochemical analysis of the extracts of roots, barks, seeds and leaves of gliricidia, teak and rubber in ethanol

Parts	Code	Tannins	Phlobatannins	Alkaloids	Glycosides	Saponnins	Sterol	Flavonoids	Carbohydrate
Gliricidia									
Barks	G1	-	+	+	-	-	-	+	-
Roots	G2	-	+	+	+	-	-	+	-
Seeds	G3	-	+	+	+	-	-	+	-
Leaves	G4	+	+	+	-	-	-	+	-
Rubber									
Barks	R5	+	+	+	-	-	+	-	-
Roots	R6	-	+	+	-	-	+	-	-
Seeds	R7	+	+	+	-	-	+	+	-
Leaves	R8	-	+	+	-	-	+	+	-
Teak									
Barks	T9	-	+	+	-	-	-	-	-
Roots	T10	-	+	+	-	-	-	-	-
Seeds	T11	-	-	-	-	-	-	-	-
Leaves	T12	+	+	+	-	-	-	+-	-

+ = Present, - = Absent

g. Test for flavonoids
A little amount of magnesium powder and a few drops of concentrated HCl were added to about 3ml of each extract. A red coloration was an indication of the presence of flavanones.

All determinations were in triplicate.

RESULTS AND DISCUSSION
Table 1-3 depict the phytochemical screening results. In the aqueous extracts tannins and phlobatannins were present (+) in the samples except in rubber (bark and roots). In all the samples alkaloids and saponnins were

indicated present sterol was absent (-). Glycoside was not present except in gliricidia root, rubber (seed and leaves) and teak seeds. In ethanol extracts, only phlobatannins was present in all the samples, saponnins and flavonoids were absent. In comparism of aqueous extract with that of ethanol, sterols was totally absent in aqueous where as it was present in rubber (bark, root, seed and leaf). In carbon tetrachloride extract, virtually all the components indicated negative except few of the samples. The sequent of the presence of the properties in all the sample preparations was:

Water>Ethanol>Carbon tetrachloride

Table 3: Phytochemical analysis of the extracts of roots, barks, seeds and leaves of gliricidia, teak and rubber in Carbon tetrachloride

Parts	Code	Tannins	Phlobatannins	Alkaloids	Glycosides	Saponnins	Sterol	Flavonoids	Carbohydrate
Gliricidia									
Barks	G1	-	-	+	-	-	-	-	-
Roots	G2	-	-	-	+	-	-	-	-
Seeds	G3	-	-	-	+	-	-	-	-
Leaves	G4	+	-	-	-	+	-	-	-
Rubber									
Barks	R5	+	-	-	-	-	-	-	-
Roots	R6	-	-	-	-	-	-	-	-
Seeds	R7	-	-	-	-	-	+	-	-
Leaves	R8	+	-	-	-	-	+	-	-
Teak									
Barks	T9	-	-	+	-	-	-	-	-
Roots	T10	-	-	+	-	-	-	-	-
Seeds	T11	-	-	+	-	-	-	-	-
Leaves	T12	+	-	+	+	-	-	+	-

+ = Present, - = Absent

Phytochemical screening results in this work were in agreement with results obtained by other authors (Amah *et al* 2001, Akpan and Usoh 2004, Hassan *et al* 2004, Banso and Adeyemo 2006). In these works, it was observed that aqueous extracts indicated almost all the components, while other solvents (organic) did not indicate their presence. The implication of this was that aqueous extracts may be suitable for treatment of several ailments. Classes of compounds are known to show curative activity against several pathogens (Hassan *et al* 2004). It would not be surprising therefore to use the plants samples to cure certain types of illness in human and animals. In contrast with results of our work, Omojasola and Awe (2004) reported that ethanol has been shown to be a stronger extractant than water, but reverse was the case here.

Saponnins are special classes of glycosides which have been reported to possess soapy properties and active microbial agents (Banso and Adeyemo 2006). Tannins have also been reported to prevent the development of microorganisms by precipitating microbial protein and making nutritional proteins unavailable to them (Sodipo *et al.*, 1991, Aletor, 1993). Alkaloids are poisonous, but they have been proved to be useful in correcting renal disorders

CONCLUSION

The results of the phytochemical screening of the extracts of the samples varied, while some of the components were present, some were absent. It was observed that most of the components were present in water extracts. Due to the presence of these secondary metabolites it may be necessary to recommend the plants understudy to be integrated into trado-medical programmes in this part of the world.

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