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PHYTO-CHEMICAL ANALYSIS OF PHYLLANTHUS AMARUS (*NELA USIRI*), PHYLLANTHUS EMBLICA AND PHYLLANTHUS ACIDUS

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ABSTRACT

The extract from leaves of Phyllanthus amarus, Phyllanthus emblica, Phyllanthus acidus are investigated for phytochemical and anti-oxidant activity. Leaf extracts with distilled water revealed the presence of anthraquinones, flavonoids, alkaloids, terpenoids, saponlns, glycosides, cardiac- glycosides except tannins. In view of antioxidant properties responsible for their popular and wide traditional use.

KEYWORDS: anthraquinones, flavonoids, alkaloids.

INTRODUCTION

Phyllanthus amarus (Euphorbiaceae) is found in all tropical regions in the world including southern India and China. In many countries around the world plants in the genus *Phyllanthus* are used in folk remedies; since this genus has a great importance in traditional medicine. *P. amarus* has been claimed to be an excellent remedy for infective hepatitis. It was reported to have anti-plasmodial, antiviral, anti-bacterial and anti-diarrheal properties Extract of *P. amarus* is protective action against CCl_4 induced mitochondrial dysfunction and hepato protective potential against ethanol, alloxan and cyclophosphamide-induced oxidative stress in rats. *P. amarus* extract also possessed anti-tumor, anti-carcinogenic and anti-inflammatory properties. Methanol extract of *P. amarus* was reported to have hypoglycemic effect on alloxan induced diabetes mellitus (R. Karuna, et al). Plants contain numerous constituents; some tend to possess toxicity. (Santos et al., ; Shaw et al., ; Kaplowitz,). *P. amarus* has been classified among plants with a low potential for toxicit,

with an LD_{50} averaging 2000 mg/kg/day (Krithika and Verma, 2009). *P. amarus* of tannins, flavonoids, saponins, and alkaloids. The plant extract are found to contain high levels of saponins, flavonoids, tannins and alkaloids (Fernand, 1998; Naaz, 2007). Phyllanthus emblica L, also known as Indian gooseberry. It is a medium-sized deciduous tree of the Euphorbiaceae family. The fruits of P.emblica are called as amla, these are consumed as fruit and in the form of food products. It primarily contains tannins, alkaloids and phenolic compounds, but the flavonoids derived from amla shows maximum beneficial in medicinal aspect. It is one of the strongest rejuvenatives among Indian medicinal plants due to its antimicrobial activity (A. Farouk et al, I. Ahmad et al), antifungal (A. Ihantola-Vormisto et al), radioprotective (S. Rajak et al), chondro protective , antimutagenic, and anticancer properties, but its most extraordinary features are its anti-inflammatory and antioxidative properties. A clinical study has also found that amla showed significant healing effect on gastric syndrome (Ananya Chatterjee, et al). Phyllanthus acidus is commonly known as star gooseberry. It is quite a common tree found in the tropics and belongs to the plant family euphorbiaceae. P.acidus is consumed as herbs by the Indian tribal for remedy of gastro intestinal tract disorders. Phyllanthus sps has long been used in folk medicine in many countries as antimicrobial and / or antioxidants (I.M.S Elden et al., 2010). Phyllanthus acidus leaf extract have antioxidant, analgesic and anti-inflammatory activities (Raja chakraborthy et al.)

Collection of Sample

Healthy leaves and fruits of Phyllanthus amarus, Phyllanthus emblica, Phyllanthus acidus were taken and washed under running water to remove the dust and other external pollutants. The plant leaves and fruits were air dried for few days (normally 15 to 21days).

Grinding the Sample

The dried leaves and fruits are grinded to a fine powder in a mixer and the powder is collected in clean polythene bags.

Preparation of Plant Extract with Distilled Water

Taken 10 gms of leaf powder and fruit powder and 50ml of distilled water was added respectively and stirred it constantly for 30 minutes and the solution was kept at room temperature for 24 hours (minimum) and then filtered. The filtered solutions of leaf and fruit are again filtered with watman filter paper No.3 and then the solutions were stored at 4 degrees centigrade (in a freezer) until use.

TESTS AND RESULTS

Each of the tests is done separately for leaves and fruits

a) Phyto Chemical Screening: Chemical test is carried out on the distilled water extract of Phyllanthus sps. using standard procedures to identify the constituents.

b) Procedure for Alkaloids: 2ml of extract is taken and added 2ml of wagner's reagent a brownish precipitate indicate the presence of alkaloids.

c) Cardiac Glycosides: 2ml of extract is dissolved with 2ml of chloroform and concentrated sulphuric acid is carefully added to form in to a layer. The deep reddish brown colour at the inter face of steroid ring indicates the presence of cardiac glycosides.

d) Flavonoids: 2ml of extract is treated with 2 ml of 10%lead acetate. Brownish green colour indicates the presence of flavonoids.

e) Saponins: 2ml of extract is dissolved with 2ml of Benedicts reagent. Blue black ppt indicates the presence of saponins.

f) Tanins: 2ml of extract is treated with 0.1% of ferric chloride. There was no brownish green ppt found hence tannins were absent.

g) Terpenoides: (Salkowski test) 2ml of extract is dissolved with 2ml of chloroform and concentrated sulphuric acid is carefully added to form a layer. A reddish brown colour indicates the presence of terpenoids.

h) Anthraquinones: 1ml of extract is boiled with 10% HCL in a water bath for few minutes. It is filtered and allowed to cool. Then equal volume of CHCl3 is added to the filtrate few drops of 10% Ammonia is added to the mixture and is heated. The formation of rose pink colour indicates the presence of anthraquinones.

i) Glycosides: The extract is hydrolysed with HCL solution and neutralised with NaoH solution. A few drops of Fehlings solution A&B are added red precipitate indicates the presence of glycosides.

Table: 1- showing results of Phyto Chemical Analysis Phyllanthus amarus (Nela usiri).

Sl. No	Phytochemicals	Distilled Water	Petroleum Ether	Acetone	Ethanol
1	**Tanins**	Positive	Positive	Positive	Positive
2	**Anthraquinones**	Positive	Negative	Positive	Positive
3	**Flavanoides**	Positive	Negative	Positive	Positive
4	**Alkaloides**	Positive	Negative	Positive	Positive
5	**Terpenoids**	Positive	Positive	Positive	Positive
6	**Saponins**	Positive	Positive	Positive	Positive
7	**Cardiac glycosides**	Positive	Positive	Positive	Positive
8	**Glycosides**	Positive	Negative	Positive	Positive
9	**Reducing Sugars**	Positive	Negative	Positive	Positive
10	**Phlobatanins**	Negative	Positive	Positive	Positive
11	**Steroids**	Positive	Positive	Positive	Positive

Table: 2- showing results of Phyto Chemical Analysis Phyllanthus emblica (Usiri,Amla).

Sl. No	Phytochemicals	Distilled Water	Petroleum Ether	Acetone	Ethanol
1	**Tanins**	Positive	Positive	Positive	Positive
2	**Anthraquinones**	Positive	Positive	Positive	Positive
3	**Flavanoides**	Positive	Positive	Positive	Positive
4	**Alkaloides**	Positive	Negative	Positive	Positive
5	**Terpenoids**	Positive	Negative	Positive	Positive
6	**Saponins**	Positive	Positive	Positive	Positive
7	**Cardiac glycosides**	Positive	Positive	Positive	Positive
8	**Glycosides**	Positive	Positive	Positive	Positive
9	**Reducing Sugars**	Positive	Positive	Positive	Positive
10	**Phlobatanins**	Positive	Positive	Positive	Positive
11	**Steroids**	Positive	Positive	Positive	Positive

Table: 3- showing results of Phyto Chemical Analysis Cicca acida (Racha Usiri).

Sl. No	Phytochemicals	Distilled Water	Petroleum Ether	Acetone	Ethanol
1	**Tanins**	Positive	Positive	Positive	Positive
2	**Anthraquinones**	Positive	Positive	Positive	Positive
3	**Flavanoides**	Positive	Positive	Positive	Positive
4	**Alkaloides**	Negative	Negative	Positive	Positive
5	**Terpenoids**	Positive	Positive	Positive	Positive
6	**Saponins**	Positive	Positive	Positive	Positive
7	**Cardiac glycosides**	Positive	Positive	Positive	Positive
8	**Glycosides**	Negative	Positive	Positive	Positive
9	**Reducing Sugars**	Negative	Positive	Negative	Negative
10	**Phlobatanins**	Negative	Negative	Positive	Positive
11	**Steroids**	Positive	Positive	Positive	Positive

CONCLUSION

The preliminary phytochemical analysis of ethanolic extracts of showed phyllanthus sps. the presence of flavonoids, tannins and phenolic compounds, terpenoids, alkaloids, saponins and phytosterols, carbohydrates and proteins, fixed oils and fatty acid. This explains the medicinal properties shown by Amla in various studies.

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