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ORIGINAL ARTICLE **OPEN ACCESS**

Phytochemical Analysis of Selected Plant Extracts

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ABSTRACT
Five medicinal plants including Annona reticulate; Nicotiana tabacum, Sapindus mukorossi, Balanites roxburghii and Vitex negundo were used for the phytochemical study.This work was carried out to investigate the presence and absence of various phytochemicals. Qualitative phytochemical analysis was done for various phytoconstituents like alkaloids, flavanoids, steroids, tannins, quinine, proteins, terpenoids and saponins by standard protocol. Extracts from this five selected plants were prepared and this prepared extract was used for phytochemical analysis. Different parts such as fruits, leaves, seeds were used for the purpose of extract preparation. Result from the investigation revealed that the aqueous extract prepared from this plants showed the presence of various phytochemicals which includes- alkaloids, flavanoids, steroids, tannins, quinine, proteins, terpenoids and saponins.
Keywords :- *medicinal plants. Phytochemicals, , acqueous extract,. fruits, leaves, seeds.*

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INTRODUCTION

Medicinal plants are known as medicinal herbs are used in various traditional medicine since prehistoric times. This medicinal plant have ability to synthesize various chemical compounds (phytochemical). This chemical compounds have ability against various insects, fungi, diseases etc. Numerous phytochemicals with potential or established biological activity have been identified. However, since a single plant contains widely diverse phytochemicals, the effects of using a whole plant as medicine are uncertain. Further, the phytochemical content and pharmacological actions, if any, of many plants having medicinal potential remain unassessed by rigorous scientific research [1, 4].

Vitex negundo Linn. (Verbenaceae), locally known as 'Nirgundi' an important medicinal plant. *Vitex negundo* Linn. is a woody, aromaticdeciduous shrub growing to a small tree. It is an erect, 2-5 m in height, slender treewith quadrangular branchlets. The plant is traditionally reported for its use for the treatment of cough, asthma, fever, eye disease, inflammation, intestinal worms, skin diseases, nervous disorders, leprosy and rheumatism. Roots are tonic, anodyne, febrifuge, bechic, expectorant and diuretic.

The Annona genus (Annonaceae) consists of about 119 species, most of which are shrubs and trees widely distributed in the tropical and subtropical regions, including the Southeast Asia countries. In Indian folk medicine, various species of Annona have been used as vermifuges, anti-inflammatory agents, in wound healing, as antimalarial agents and in the treatment of diarrhoea and dysentery [4].

Nicotiana tabacum L., which originates from South America, has been widely used as a therapeutic plant Its leaves are beneficial for the treatment of gastrointestinal disorders, abdominal discomfort, constipation, urinary tract obstruction, dental pain and dermatitis [3].

Balanites aegyptiaca Del. (Zygophyllaceae), known as 'desert date,' is spiny shrub or tree up to l0 m tall, widely distributed in dry land areas of Africa and South Asia. It is traditionally used in treatment of various ailments i.e. jaundice, intestinal worm infection, wounds, malaria, syphilis, epilepsy, dysentery, constipation, diarrhea, hemorrhoid, stomach aches, asthma, and fever. It contains protein, lipid, carbohydrate, alkaloid, saponin, flavonoid, and organic acid.

Sapindus mukorossi (fam: Sapindaceae), well known as soapnuts, are used medicinally as an expectorant, emetic, contraceptive, and for treatment of excessive salivation, epilepsy, chlorosis, and migranes. *Sapindus mukorossi* is a popular ingredient in Ayurvedic shampoos and cleansers. They are used in Ayurvedic medicine for treatment of eczema, psoriasis, and for removing freckles. Soapnuts have gentle insecticidal properties and are traditionally used for removing lice from the scalp. Most of the phytochemical constituents of this plant have been discovered by various scientists. Among them the most explored phytoconstituents

MATERIAL AND METHODS

Preparation of extracts

The aqueous extract was prepared from these seeds as per the method given by Elamin *et al*. [2] with some modifications. Seeds were cleaned with the help of tap water to remove the dirt. Further they were crushed into small pieces and powdered. 250g of powder was taken to which 500 ml of cow urine and 1200 ml of distilled water was added. Final volume was made to 1700 ml was transferred to 2 litre capacity container, with entire material allowed to soak for 5 days. After this it was boiled in a vessel until it reduces to half and with the help of muslin cloth it was filtered and filtrates was used to access phytochemicals.

Tests for detection of various phytochemicals [6, 7]

Mayer's test for alkaloids

The extracts were treated with Mayer's reagent (1.36 g mercuric chloride and 5 gms of potassium iodide was dissolved in 100 ml distilled H_2O). The formation of a yellow cream precipitate indicates the presence of alkaloids.

Ferric chloride test for flavanoids

The extract was treated with a few drops of $FeCl_3$ solution. Formation of a blackish red colour indicates the presence of flavanoids 16, 17.

Test for steroids-

2 ml of acetic anhydride was added to 0.5 g ethanolic extract of each sample with 2 ml H_2SO_4. Change in colour from violet to blue or green indicates the presence of steroids.

Test for quinones

To 1 ml of extract, 1 ml of conc. H_2SO_4 was added. Formation of red colour indicated the presence of quinines.

Biuret test for proteins

Extracts were treated with 1 ml of 10% NaOH solution & heated. To this a drop of 0.7% $CuSO_4$ solution was added. Formation of purplish violet colour indicates the presence of proteins13.

Salkowski test for terpenoids

To 1 ml of the solvent extract, 2 ml of chloroform was added. Then 3 ml of conc. H_2SO_4 was added carefully to form a layer. A reddish brown coloration of the interface indicated the presence of terpenoids.

Test for tannins

To 1 ml of the solvent extract, few drops of 1% $FeCl_3$ solution were added. The appearance of a blue, black, green or blue green precipitate indicated the presence of tannins.

RESULTS AND DISCUSSION-

The results from the investigation revealed that the aqueous extract of *Annona reticulate* leaves tested showed positive results for presence of alkaloids, flavanoids, tannins, quinine, proteins, terpenoids and saponins. In case of *Nicotiana tabacum* extract positive results for presence of alkaloids, tannins and saponins. While in *Sapindus mukorossi* extract showed the presence of alkaloids, steroids, tannins, proteins, terpenoids and saponins. *Balanites aegyptiaca* extract showed the presence of alkaloids, steroids, proteins, terpenoids and saponins. *Vitex negundo* extract showed the presence of alkaloids, flavanoids, tannins, quinine, terpenoids and saponins. Table of various presence and absence phytochemicals are showed in table no-1 as below.

Table: 1 Phytochemical analysis of Various plant.

Sr. No	Test	*Sapindus mukorossi* (Ritha)	*Balanites aegyptiaca* (Hingan)	*Nicotiana tabacum* (Tobacco)	*Annona reticulate* (Cluster apple)	***Vitex negundo*** (Nirgudi)
1	Alkaloids	+Ve	+Ve	+Ve	+Ve	+Ve
2	Flavanoids	-Ve	-Ve	-Ve	+Ve	+Ve
3	Steroids	+Ve	+Ve	-Ve	-Ve	-Ve
4	Quinine,	-Ve	-Ve	-Ve	+Ve	+Ve
5	Proteins	+Ve	+Ve	+Ve	+Ve	-Ve
6	Terpenoids	+Ve	+Ve	-Ve	+Ve	+Ve
7	Tannins	+Ve	-Ve	+Ve	+Ve	+Ve
8	Saponins	+Ve	+Ve	+Ve	+Ve	+Ve

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