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PHYTOCHEMICAL POTENTIALS OF SUCCESSIVE SERIES OF *TECTONA GRANDIS* L., *VIOLA ODORATA* L.

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ABSTRACT

The phytochemical screening was carried out on the Tectona grandis L. (Sagwan (Leaf and Stem)), Viola odorata L. (Banpasha) successive series extract, showed the presence of useful phytonutrients. The results showed that Tectona grandis leaf all six solvent extract contained the reducing sugar, terpenoids, tannin, saponins and showed the absence of flavonoids and Tectona grandis stem all six solvent extract contained reducing sugar, terpenoids, tannin, saponins and flavonoids, while Viola odorata showing the presence of reducing sugar, terpenoids, saponins and absence of flavonoids. The results of the phytochemical screening on the two species of medicinal plants were discussed in relations to their usefulness to mankind.

KEYWORDS : *Tectona grandis L., Viola odorata L., phytochemical screening, phytonutrients, Medicinal plant.*

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INTRODUCTION

The phytoconstituents are accountable for the pharmacological screening in the existence of phytochemical constituents. The petroleum ether extract and ethanolic extract subjected to initial qualitative chemical examination. Standard technique were used for initial phytochemical screening of the extract was performed to know the phytoconstituents in the extract (Kokate *et. al.,* 2007, Khandelwal *et. al*., 2004), and it was found that extract contains carbohydrate, glycosides, proteins, steroid, amino acids, tannins and flavoniods.

Sagwan or Teak *(T. grandis*), is a giant and handsome deciduous tree. Its botanical family is Verbenaceae. It is called sagon, saigon, saj, taku, kayum, etc in home languages. It grows fine in warm climate and well-drained soil. It grows naturally in Myanmar and central and southern India and is propagated artificially in the Indo Gangetic plains, and the foothills from Bengal to Haryana and Punjab on comparatively lesser scale, especially as an avenue tree. It grows gladly in low height plains to the foothills up to 800 m.

V. odorata is a type of the genus Viola native to Europe and Asia, but has also been introduced to North America and Australasia. It belongs to a family Violaceae. It is usually identified as Wood Violet (Asakawa and Asakawa, 2001) Sweet Violet, English Violet, Common Violet, or Garden Violet. The herb is known as Banafsa, Banafsha or Banaksa in India, where it is frequently used as solution for sore throat and tonsilitis.

MATERIALS AND METHODS

Collection: Plant sample *Tectona grandis* L. (Sagwan), *Viola odorata* L. (Banpasha) were collected from various tribes living in tribal pockets of Mt. Abu, arid zone of Rajasthan, in the month of Feb, 2010. These plants were used by these tribes in their daily lives to cure various ailments.

Identification: These samples were authenticated and submitted in Ethnomedicinal Herbarium, Centre of Excellence (funded by DST), MGiaS, Jaipur (Rajasthan).

Preparation of test extracts: Crushed powders of species were successively soxhlet extracted. Later, each of the homogenates was filtered and the residue was re-extracted twice for complete exhaustion, the extracts were cooled individually. Each filtrate was concentrated to dryness in vitro and re dissolved in respective solvents, were stored at 4°C in a refrigerator, until screened for phytochemical activity.

Phytochemical Screening: Phytochemical screening was performed using standard procedure:

Test for Reducing sugar (Fehlings Test) - The aqueous extract (0.5gm in 5 ml of water) was added to boiling fehling's solution (A and B) in a test tube. The solution was observed for a color reaction.

Test for Terpenoids (Salkowski Test) - To 0.5 gm each of the extract was added to 2ml of chloroform. Concentrated sulphuric acid (3ml) was carefully added to form a layer. Reddish brown coloration of the interface indicates the presence of terpenoids.

Test for Flavonoids- 4ml of extract solution was treated with 1.5ml of 50% methanol solution. The solution was warmed and metal magnesium was added. To this solution, 5-6 drops of concentrated Hydrochloride acid was added and red colour was observed for flavonoids and orange color for flavons.

Test for Tannins- About 0.5 g of the extract was boiled in 10ml of water in a test tube and then filtered. A few drops of 0.1% ferric chloride was added and observed for brownish green or a blueblack coloration.

Test for Saponins- To 0.5 g of extract was added 5 ml of distilled water in a test tube. The solution was shaken vigorously and observed for a stable persistent froth. The frothing was mixed with 3 drops of olive oil and shaken vigorously after which it was observed for the formation of an emulsion.

RESULTS AND DISCUSSION:

Phytochemical Screening:

The result of the phytochemical screening is presented table- 1, 2 and 3. This reveals moderate concentration of reducing sugar, saponins, tannins, flavonoids and terpenoids some of which chemical compounds have been associated to antimicrobial activities and thus have curative properties against pathogens (Nweze *et. al*., 2007). The present study indicates that oral administration of successive extracts of Indian medicinal plants (*Tectona grandis* L. (Sagwan), *Viola odorata* L. (Banpasha), dose dependently improves the potentials against healing activities. Further pharmacological and biochemical investigations are essential to elucidate the mechanism of action.

These Phytocompounds are known to be biologically active and therefore aid the antimicrobial activities. These secondary metabolites exert various activities through different mechanisms. Tannins have been found to form irreversible complexes with proline rich protein (Shimada, 2006) resulting in the inhibition of cell protein synthesis. Parekh and Chanda (2007) reported that tannins are known to react with proteins to provide the typical tanning effect which is important for the treatment of inflamed or ulcerated tissues. Herbs that have tannins as their main components are astringent in nature and are used for treating intestinal disorders such as

diarrhea and dysentery (Dharmananda, 2003). These observations therefore support the use of these medicinal plants in herbal cure remedies.

Saponin was found to be present in these plants extracts and has supported the usefulness of in managing inflammation. Flavonoids, another constituent of extracts exhibited a wide range of biological activities like antimicrobial, anti-inflammatory, anti-angionic, analgesic, anti-allergic, cytostatic and antioxidant properties (Hodek *et. al*., 2002).

Table –1 Preliminary phytochemical screening of the plant *Tectona grandis* (Sagwan (Leaf)) (+: present) (- : absent).

Plant Extracts	Reducing sugar	Terpenoides	Flavonoids	Tannin	Saponin
Pet.ether	+ve	-ve	-ve	+ve	+ve
Benzene	+ve	+ve	-ve	+ve	-ve
Chloroform	+ve	-ve	-ve	-ve	+ve
Ethyl acetate	+ve	+ve	-ve	-ve	+ve
Methanol	+ve	+ve	-ve	+ve	-ve
Distilled water	+ve	+ve	+ve	-ve	+ve

Phytochemical constituents of *Tectona grandis* (Sagwan (Leaf)) is presented in Table- 1. This result reveals moderate concentration of reducing sugar, flavonoids, saponins, terpenoids and tannin in different extraction solvents. Standard method were used for preliminary phytochemical screening of the extract was performed to know the phyto-constituents in the extract and it was found that petroleum extract contains reducing sugar, tannin and saponins, benzene extract contains reducing sugar, terpenoids and tannin, chloroform extract contain reducing sugar and saponins, ethyl acetate extract contains reducing sugar, terpenoids and saponins, methanol extract contains reducing sugar, terpenoids and tannin and distilled water extract contains redusing sugar, terpenoids, flavonoids and saponins.

Table -2. Preliminary phytochemical screening of the plant *Tectona grandis* (Sagwan (stem)) (+ : present) (- : absent).

Plant Extracts	Reducing sugar	Terpenoides	Flavonoids	Tannin	Saponin
Pet.ether	+ve	-ve	-ve	-ve	+ve
Benzene	+ve	+ve	-ve	-ve	+ve
Chlorofom	+ve	+ve	-ve	-ve	-ve
Ethyl acetate	+ve	-ve	-ve	-ve	+ve
Methanol	+ve	-ve	-ve	+ve	-ve
Distilled water	+ve	+ve	+ve	-ve	+ve

The result of the phytochemical screening of *Tectona grandis* (Sagwan (stem)) is showed in Table -2. This reveals moderate concentration of reducing sugar, flavonoids, saponins, terpenoids and tannin in different extraction solvents. Standard method were used for preliminary phytochemical screening of the extract and performed to know the phyto-constituents in the extract and it was found that petroleum extract contains reducing sugar and saponins , benzene extract contains reducing sugar, terpenoids and saponins, chloroform extract contain reducing sugar and terpenoids, ethyl acetate extract contains reducing sugar and saponins, methanol extract contains reducing sugar and tannin and distilled water extract contains redusing sugar, terpenoids, flavonoids and saponins.

Table -3. Preliminary phytochemical screening of the plant *Viola odorata* (Banpasha) - (+: present) (- : absent).

Plant Extracts	Reducing sugar	Terpenoides	Flavonoids	Tannin	Saponin
Pet.ether	+ve	+ve	-ve	-ve	+ve
Benzene	+ve	+ve	-ve	-ve	+ve
Chloroform	+ve	+ve	-ve	+ve	+ve
Ethyl acetate	+ve	-ve	-ve	+ve	+ve
Methanol	+ve	-ve	-ve	+ve	+ve
Distilled water	+ve	+ve	-ve	+ve	+ve

The phytochemical screening result of *Viola odorata* (Banpasha) is presented in Table -3. This reveals modest concentration of reducing sugar, flavonoids, saponins, terpenoids and tannin in different extraction solvents. Standard method were used for preliminary phytochemical screening of the plant extract and performed to know the phyto-constituents in the extract and it was found that petroleum extract contains reducing sugar, terpenoids and saponins, benzene extract contains reducing sugar, terpenoids and saponins, chloroform extract contain reducing sugar, terpenoids, tannin and saponins, ethyl acetate extract contains reducing sugar, tannin and saponins, methanol extract contains reducing sugar, tannin and saponins and distilled water extract contains redusing sugar, terpenoids, tannin and saponins.

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