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RESEARCH ARTICLE

PHYTOCHEMICAL ANALYSIS OF *TINOSPORA CORDIFOLIA* BY USING DIFFERENT SOLVENT EXTRACT

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ABSTRACT

Various medicinal properties are attributed to natural herbs. Medicinal plants represent the most source of recent prescription drugs and care product. The historical back drop of plants being used for medicative purpose is perhaps as old because the history of human race. Extraction and classification of many active phytocompounds from these green factories have born to some high activity profile medicine. A growing body of proof indicates that secondary plant metabolites play major roles in human health and will be nutritionally vital. Phytochemical screening of plants has disclosed the presence chemicals as well as steroids, alkaloids, tannins, flavonoids, glycosides, saponins, phenols, aminoacid, carbohydrate, terpenoids etc. several plant extracts and phytochemicals show antioxidant/free radical scavenging properties (Larson 1988; Nair *et al*., 2007; Parekh and Chanda, 2007). Secondary metabolites of plants act as defense mechanisms against predation by several microorganisms, insects and herbivores (Lutterodt *et al*., 1999; Marjorie, 1999).

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INTRODUCTION

Plants produce wide ranges of secondary metabolites, creating them an excellent supply of assorted kinds of medicines. A continual and widespread use of medicative plants throughout the globe has increased the priority over their safety. The phenolic compounds are one among the most important and most present teams of plant metabolites that possess an aromatic ring bearing one or additional radical constituents (Singh *et al*., 2007). Phenolic compounds are wide found within the secondary product of medicative plants, yet as in several edible plants (Hagerman *et al*., 1998). A number of studies have focused on the biological activities of phenolic compounds, that are potential antioxidants and free radical-scavengers (Rice-Evans *et al*., 1995; Kahkonen *et al*., 1999; Sugihara *et al*. 1999; Cespedes *et al*., 2008; Reddy *et al*., 2008). Many studies have delineate the inhibitor properties of medicative plants, foods, and beverages that are made in phenolic compounds (Brown and Rice-Evans 1998; Krings and Berger 2001). Flavonoids are a broad class of plant phenolics that are noted to possess a well established protecting ability against membrane lipoperoxidative damages (Sen *et al*., 2005). Plant product are a part of phytomedicines since past times. These may be derived from any a part of the plant like bark, leaves, flowers, roots, fruits, seeds, etc (Gordon and David, 2001) i.e. any a part of the plant could contain active elements. information of the chemical constituents of plants is fascinating as a result of such info are going to be useful for the synthesis of complicated chemical substances. Such phytochemical screening of assorted plants is rumored by several employees (Mojab *et al*., 2003; Parekh and Chanda, 2007b; Parekh and Chanda 2008). Within the gift work, qualitative and quantitative phytochemical analysis was meted out within the fifty three plants screened. Tinosporacordifolia belongs to family Menispermacea, ordinarily called Guduchi or Giloy. It's a glabrous deciduous creeper with greyish brown-black stem and tiny wart on surface. Stem is woody, cylindrical and five to twenty five millimeter in diameter. The leaves are simple it's wide employed in Ayurveda and folks system of drugs in India since ancient time. Ancient, Giloy has been used as medication, antidiabetic, anti-spasmodic, jaundice, urinary tract infections, carminative, skin problem, digestive, stress, blood purification and anti-oxidant properties.

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MATERIALS AND METHODS

Plant collection and extraction

Fresh stem and leaves of Tinosporacordifolia were collected from bundelkhandregion.

Table 1. Phytochemical screening of *Tinosporacordifolia*leaves and stem extracts. Where + sign indicates Presence and – sign indicates absence. Whereas PET, CHL, MET, ETH and AQS indicates petroleum ether, chloroform, methanol, ethanol and water respectively

Phytochemical Test	Leaf extract					Stem extract				
	PET	CHL	MET	ETH	AQS	PET	CHL	MET	ETH	AQS
Alkaloids	-	-	+	+	+	-	-	+	+	-
Amino- acids	-	-	+	+	-	-	-	-	-	-
Carbohydrates	-	-	+	+	+	-	-	+	-	+
Cardiac glycosides	+	+	+	+	+	-	+	+	-	-
Flavonoids	-	-	+	+	-	-	-	+	+	-
Phenols	-	-	+	+	+	-	-	+	+	-
Saponines	-	-	+	-	+	-	-	-	-	+
Tannins	-	+	-	+	+	-	-	-	+	-
Terpenoids	-	+	+	+	-	-	-	-	+	-
steroids	+	-	+	-	+	+	-	+	-	-

The preliminary qualitative phytochemical analysis was carried out in crude dry powder of plants.Preliminary qualitative phytochemical screening (Harbone 1998; Parekh and Chanda 2007)

Chemicals

Petroleum ether, Chloroform, methanol, Alcohol and Water.

Alkaloids

The methanolic extract of the crude dry powder of every plant was evaporated to dryness in a boiling water bath. The residue was dissolved in a pair of N HCl. The mixture was filtered and therefore the filtrate was divided into three equal parts.One portion was treated with a couple of drops of Mayer's chemical agent; one portion was treated with equal quantity of Dragondroff's chemical agent and therefore the alternative portion was treated with equal quantity of Wagner's reagent. The creamish precipitate, orange precipitate and brown precipitate, indicated the presence of respective alkaloids (SalehiSurmaghi *et al*., 1992).

Flavonoids

The presence of flavonoids was estimated by Shinoda test. The alcoholic extract of the crude dry powder of every plant was treated with a few drops of focused HCl and magnesium ribbon. the looks of pink or tomatom red color within a few minutes indicated the presence of flavonoids (Somolenski *et al*., 1972).

Tannins

The water extract of the crude dry powder of every plant was treated with alcoholic FeCl3 reagent. Blue color indicated the presence of tannins (Segelman *et al*., 1969).

Cardiac glycosides

Keller-kiliani check was performed to assess the presence of cardiac glycosides. The crude dry powder of every plant was treated with one ml of $FeCl_3$ chemical agent (mixture of one volume of fifty $FeCl_3$ answer and ninety nine volumes of glacial acetic acid). To the present solution a few drops of concentrated H_2SO_4 was added. Look of blue color among a few minutes indicated the presence of cardiac glycosides (Ajaiyeobu, 2002).

Steroids

Liebermann-Burchard reaction was performed to assess the presence of steroids. A chloroform solution of the crude dry powder of every plant was treated with acetic anhydride and a couple of drops of concentrated H_2SO_4 were added down the sides of the tube. A blue green ring indicated the presence of terpenoids.

Saponins

The presence of saponins was determined by Frothing test. The crude dry powder of every plant was vigorously agitated with H_2O and was allowed to face for ten minutes and classified for glucoside content as follows: no froth indicate absence of saponins and stable froth more than one. 5 cm indicated the presence of saponins (Kapoor *et al*., 1969). Total phenol determination. Total phenolic content of the extracts was determined by FolinCiocalteu reagent technique (Mc Donald *et al*., 2001) with some modifications. Plant extract (1 ml) was mixed with Ciocalteu chemical agent (0.1 ml, 1 N), and allowed to face for fifteen min. Then five ml of saturated Na_2CO_3 was added. The mixtures were allowed to stand for thirty min at temperature and therefore the total phenols were determined spectrophotometrically at 760 nm. Gallic acid was used as standard. Total phenol values are expressed in terms of acid equival.

Flavonoid determination

Aluminium chloride colorimetric technique (Chang *et al*., 2002) with some modifications was used to confirm flavonoid content. Plant extract (1ml) in methyl alcohol was mixed with 1ml of methyl alcohol, 0.5 ml chloride (1.2 %) and 0.5 ml K acetate (120 mM). The mixture was allowed to stand for thirty min at room temperature; then the absorbance was measured at 415 nm. Quercetin was used as normal. Flavonoid content is expressed in terms of quercetin equivalent (mg g-1 of extracted compound).

Detection of aminoacids

Ninhydrin Test: To the extract, 0.25% w/v ninhydrin chemical agent was added and boiled for few minutes. Formation of blue color indicates the presence of aminoacids.

Detection of carbohydrates

Extracts were dissolved severally in five ml H_2O and filtered. The filtrates were accustomed test for the presence of carbohydrates.

Test for terpenoids (Salkowki's test)

2mL of every extracts were treated with Chloroform (1 mL) followed by a few drops of focused sulphuric acid. A sepia precipitate produced now indicated the presence of terpenoids.

RESULTS AND DISCUSSION

The preliminary phytochemical screening of leaves and stems of *T. cordifolia* revealed the presence of different bioactive secondary metabolites which might be responsible for their medicinal attributes. The outcome of qualitative phytochemical analysis of leaf and stem are presented in Table 1.

Conclusion

Phytochemical screening of leaf and stem extracts of *T. cordifolia*indicates the presence alkaloids, cardiac glycosides, tannins, phenols, carbohydrates and flavonoids and suggested that it is a importance source of bioactive compound that may supply novel medicines. Phytochemical analysis of this plant may be useful in developing new specialized drugs with more efficiency.

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