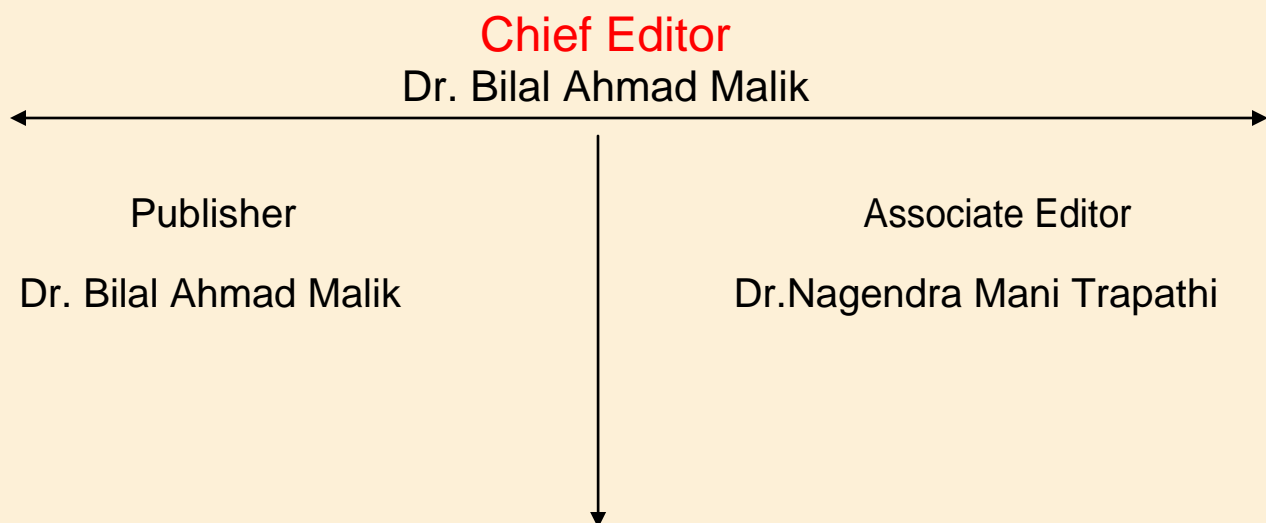


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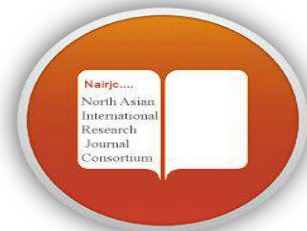
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PHYTOCHEMICAL ANALYSIS OF MEDICINAL, PLANT OF *GARDENIA RESINIFERA* (ROXB.) 'DIKEMALI.'

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ABSTRACT:

*The present study was designed to evaluate the phytochemical composition of the endangered medicinal plant of *Gardenia Resinifera* (Roxb.) 'Dikemali' belonging to family Rubiaceae collected from Bhiwapur Tahsil of Nagpur District, (M.S), India. Its phytochemical and physico-chemical properties were investigated. The study included evaluation of physicochemical parameter such as extractive value, ash value, moisture content and crude fibre. Further phytochemical screening of all preparations was performed. It revealed the presence of phytochemicals like, Proteins, Carbohydrates, fats, Alkaloids, Flavonoids, Phytosterols, Phenols, Glycosides and Saponins. Thus from the above result a physicochemical and phytochemical profile of *Gardenia Resinifera* was developed. The results obtained in this study suggest the identified phytochemical compounds may be the bioactive constituents and the plant is providing increasingly valuable reservoirs of bioactive compounds of substantial medicinal merits. The phytochemical analysis conducted on the plant extracts revealed the presence of constituents, which are known to exhibit medicinal properties. The study will help in the quantitative estimation of various trace element concentrations for determining the effectiveness of this medical plant in treating various diseases.*

KEY WORDS: *Gardenia Resinifera* (Roxb.), Bhiwapur, phytochemical and physicochemical screening.

INTRODUCTION:

Medicinal plants are the nature's gift to human being to make disease free healthy life and are considered as the chemical laboratories with global importance. Use of plant to alleviate human sufferings is as old as humans themselves. The relation between healing plants and human beings date back to pre-historic era. God has

bestowed some specific power to certain plants; India is a country rich in indigenous herbal resources which grow on varied topography and under changing agro climatic conditions permitting the growth of almost 20,000 plant species. It has one of the oldest, richest, and most diverse cultural traditions known as folk tradition associated with the use of medicinal herbs. For sustenance of any specific biodiversity, the traditional knowledge of utilizing medicinal plants must be in resilience of environment, [10, 12]. Thus proper documentation of knowledge is required in order to protect over exploitation leading to severe environmental degradation [7].

The medicinal value of plants lies in naturally occurring phytochemical constituents that produce a definite physiological action on the human body [13].

MATERIAL AND METHODS:

The leaves of *Gardenia Resinifera* were collected from Bhiwapur Tahsil of Nagpur District (M.S.), India. During the study periodic field trips were conducted in different seasons, of the tribal areas. The data were collected according to the methodology suggested by [6]. Questionnaire was prepared giving the detailed information. The plant was identified based on its floral description given in the literature. The healthy and disease free plant leaves were collected, identified and authentically certified.

METHOD:

The collected leaves of *Gardenia Resinifera* were washed with running tap water and shade dried. The dried material was then powdered using the mechanical method and stored in air tight container.

EXTRACTION:

The powdered leaf material was subjected to successive solvent extraction like petroleum ether, methanol and water. 50gms of powdered plant material was subjected to sox let extraction for 12-16 hrs with 300mls of the various solvents. The extracts obtained were then kept for evaporation to remove the excessive solvents. These extracts were stored in a cool dry place for the analysis for the presence of preliminary phytochemicals.

RESULT:**PHYSICO-CHEMICAL**

Determination of ash content is the first step in analysing the amount of individual minerals. It is the residue of burned plant parts. Ash contains inorganic material of the plant. It destroys all the organic matter present in the sample. Natural ash content is due to the minerals like calcium, phosphorus, iron, potassium and its composition. A low value indicates deficiency or excess sugar.

In the present investigation high value of ash is observed this indicates that the plant is the good source of minerals.

The leaves of *Gardenia Resinifera* plant show significant extractive values against water, methanol and petroleum ether as a solvent with 50gms of leaf sample.

The extractive values observed; in water 43.5%, methanol; 27.5% and petroleum ether 28.0%. The highest value is observed in water and lowest in methanol.

Alcoholic extraction by decoction method was observed to be 15.41%.

PRELIMINARY PHYTOCHEMICAL ANALYSIS

The screening of plants for medicinal value has been carried out by number of workers with the help of preliminary phytochemical analysis, [4, 16]. Screening is of paramount importance in identifying new source of therapeutically and industrially valuable compound having medicinal significance, to make the best and judicious use of available natural wealth.

The *Gardenia Resinifera leaves* in the present study was shade dried, powdered and subjected to various qualitative tests as per the procedures mentioned in the standard reference books, for the identification of phytochemical such as, alkaloids, phenols, glycosides, saponins, flavonoids and steroids using different solvents[5]. The presence (+) or absence (-) of phytoconstituents is shown in table-1. Chemical test helps in the confirmation of the chemical nature of the major bioactive compounds present in the plant extract which may retain a wide range of action.

Preliminary Phytochemical Analysis of *Gardenia resinifera* Roxb, Table - 1

Phytoconstituents	Test	Observations	Inference
Alkaloids	Dragendroff's	Orange coloured PPT produced	+
Alkaloids	Mayer's test	Cream coloured PPT	+
Alkaloids	Wagner's Test	Reddish brown coloured PPT produced	+
Flavonoids		Magenta(brick) red colour produced	+
Proteins	Biuret test	Violet or purple colour produced	+
Proteins	Millon's test	Red colour produced	+
Carbohydrates	Molisch's test	Red or dull Violet colour produced	+
Carbohydrates	Fehling's test	Yellow or red coloured PPT produced	+
Phytosterols	Liebermann-Buchard test	Dark red or pink colour produced	+
Phenols	Ferric chloride test	Deep blue or black colour produced	+
Glycosides	Baljet test	Yellow to orange colour produced	+
Glycosides	Keller-Killiani test	Two layer reddish brown produced, in upper layer turns bluish green colour produced.	+
Saponins	Foam test	Persistent foam produced	+

In the present investigation extracts of *Gardenia resinifera* leaves showed the presence of various phytochemicals like, glycosides, phytosterols, phenols, saponins, alkaloids, flavonoids and tannins.

The successive extractions were carried out using petroleum ether, methanol and aqueous (water) as solvents. The petroleum ether and methanol extract of the plant was found to contain phenols and phyto sterols. The water extract showed the presence of all the phytoconstituents, alkaloid, flavonoids, phyto sterols, phenols, glycosides, resins and saponins.

CONCLUSION AND DISCUSSION

Phytochemicals are the secondary plant metabolites which are biologically active non-nutrients and antioxidant constituents in plants that have initiated a number of researches and scientists for exploration of their roles in protection and maintenance of human health.

In the present investigation the leaf extracts of *Gardenia resinifera* one of the endangered medicinal plants showed the presence of various phytochemicals like, glycosides, phytosterols, phenols, saponins, alkaloids and flavonoids.

The successive extractions were carried out using petroleum ether, methanol and aqueous (water) as solvents. The petroleum ether and methanol extract of the plant was found to contain phenols and phyto sterols. The water extract showed the presence of all the phytoconstituents, alkaloid, flavonoids, phyto sterols, phenols, glycosides, tannins, resins and saponins.

The extractive values observed; in water 43.5%, methanol; 27.5% and petroleum ether 28.0%. The highest value is observed in water and lowest in methanol.

Alcoholic extraction by decoction method was observed to be 15.41%.

The phenolic compounds are the largest and most active groups of the plant metabolites [18]. They are rich in antioxidant properties [1, 12]. Phenolic are active in curing kidney and stomach problems as well as helpful as anti-inflammatory in action, [19]. Several experimental studies have revealed biological and pharmacological properties of phenolic compounds especially for their anti-inflammatory activity, antiviral and cytotoxic activity [2, 3]. Phenolic have attracted a great attention in relation to their potential for their beneficial effects on human health. Phenols are reported in the present study.

Steroids have been reported to have antibacterial property and are very important compounds especially due to their relationship with compound such sex hormones [15,17]. Steroids have been reported to have antibacterial property.[15].

Flavonoids are well known for their anti-viral, anti-inflammatory, antioxidant, cytotoxic properties and used in treatment of hypertension, diabetes, rheumatic fever etc.

Alkaloids have been reported to possess wide range of therapeutic importance in the fields of cancer, malaria, pain, inflammation, Parkinsonism, hypertension and number of central nervous system disorders.

Saponins are a known anti-nutritional factor present in *Gardenia resinifera*. The young shoots are the source of 'Dikamali' gum, used to rub on the gums of infants when teething. The gum is antiseptic, carminative, stimulant and repellent.

The leaves of *Gardenia resinifera* in the present study of Bhiwapur is found to be useful having the wide range of medicinal applications [15]. The natural regeneration of the species is poor as it produces few mature seeds which

are the only means of regeneration; the fruits are eaten by the birds. The plant does not propagate by vegetative methods; hence, other means of propagation can be developed. It has the potential for growing in garden but has slow growth because of intrinsic factors. Some awareness can be created among the people about its use and importance for sustainable utilization. It is therefore necessary to develop appropriate programme for its conservation

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