

Preliminary Phytochemical Screening of Seeds and Leaves of *Hydnocarpus Wightiana Blume*

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Abstract: *Hydnocarpus Wightiana Blume* is an Indian traditional plant used in treating diabetes. *Chaulmoogra Oil* is obtained from the seeds and has been used in treating leprosy from past twenty years. *Hydnocarpus Wightiana Blume* possesses strong antioxidant, α -glucosidase inhibitory activity. The ethanolic extract of the seeds and leaves also have the chemical constituents like luteolin, hydnocarpin which are responsible for having free radical scavenging nature. The Phytochemical screening of the seeds and leaves of *Hydnocarpus Wightiana Blume* showed a considerable amount of tannins, phenol, Saponin, flavonoids, glycosides and steroids were found in the aqueous and methanolic extracts while a very less amount of phytochemicals were found in ethanolic extracts. The presence of alkaloid has been seen in methanolic and aqueous extract but less in ethanolic extracts. Carbohydrate was absent in methanolic and ethanolic extracts but a small amount was found in aqueous extracts. Glycoside is present in varying proportion in methanol, aqueous and ethanol extract. From The Phytochemical analysis I found that the extract has the antioxidant property and antidiabetic property and further the assay could be carried out to see the quantitative presence of phytochemical compounds. This phytochemical constituents can further be analysed for antidiabetic property. The main aim of the research was to select *Hydnocarpus Wightiana Blume* based on its traditional use for various ailments like leprosy, anti-oxidant, secondary syphilis, rheumatism ophthalmic, the folklore claim of *Hydnocarpus Wightiana Blume* shows that it is having antioxidant properties and antidiabetic activity. Hence to identify and prove an excellent drug, the present investigation aims to carry out preliminary phytochemical studies and pharmacological screening to support the folklore claim on the basis of scientific background *Hydnocarpus wightiana blume* was chosen in the present investigation because it has been advocated to possess the antidiabetic and antileprotic property but it has not been screened for the active principle and has been only studied on crude extract hence to further track the active principle the above mentioned plant was used.

Keywords: phytochemical, antioxidant, antidiabetic, *HYDNOCARPUS WIGHTIANA BLUME*

1. Introduction

For thousands of years mankind is using plant source to alleviate or cure illnesses. Plants constitute a source of novel chemical compounds which are of potential use in medicine and other applications. Medicinal Plants contains many active compounds or secondary metabolites such as alkaloids, steroids, tannins, glycosides, volatile oils, fixed oils, resins, phenols and flavonoids which are deposited in their specific parts or organs such as leaves, flowers, bark, seeds, fruits, root, etc. The beneficial medicinal effects of plant materials typically result from the combination of these secondary products (Tonthubthimthong et al., 2001). In 1985 Farnsworth et al., identified 119 secondary plant metabolites which were used as drugs. Out of 255 drugs which are considered as basic and essential by the World Health Organization (WHO), 11% are obtained from plants © 2013|IRJSE. All right reserved and a number of synthetic drugs are also obtained from natural precursors. Phytochemicals constituents are known to possess antioxidant (Wong et al., 2009), antibacterial (Nair et al., 2005), antifungal (Khan and Wassilew, 1987), antidiabetic (Singh and Gupta, 2007; Kumar et al., 2008a), anti-inflammatory (Kumar et al., 2008b), and radio-protective activity (Jagetia et al., 2005), and due to these properties they are largely used for medicinal purpose. The development of drug resistance and the undesirable side effects of certain antibiotics have led to the search for new antimicrobial agents, mainly among plant kingdom, in order to find with unique chemical structures. Deriving potential benefits from plants has always been a field of speculation for researchers and has formed the basis for development of drugs to treat various diseases. Hence forth, screening of

plants for the 55 Joseph et al., 2013. Int. Res. J. of Science & Engineering, Vol. 1(2): 55-62 presence of natural products and beneficial properties presents a major avenue. The resistance acquired by microbes to the existing antibiotics calls for increased efforts in the development of new antibiotics. Although a number of plants with antimicrobial potential have been identified, great number still remains unidentified. Great range of bioclimatic variation from tropical to alpine brings richness in biological diversity. Many different kinds of plants are prevalent in India and a large number of them have been used for antimicrobial assay (Watanabe et al, 2005). There is a vital need of extensive studies of medicinal plants found with a special reference to their properties to fight against Pathogens. Therefore, qualitative phytochemical screening of medicinal plants like *HYDNOCARPUS WIGHTIANA BLUME* was carried out for its antimicrobial efficiency. The main purpose of the investigation was collection and identification of plant materials and screening for presence of various phytochemicals constituents in this medicinal plants.

2. Materials and Methods

Seeds and Leaf of *HYDNOCARPUS WIGHTIANA BLUME* medicinal plants were separated, washed carefully with tap water, rinsed with distilled water, air dried for 1 hour, and shade dried. They were ground in to powder and stored in room temperature. The extract of the samples were prepared by soaking 100gm of dried powder in 200ml of different selected solvents like methanol, ethanol and water for 12 hours. The extracts were filtered using Whatman filter paper No. 42.

Preliminary phytochemical screening:

The different qualitative chemical tests were performed for establishing the profile of given extracts to detect various phytoconstituents present in them.

Test for Alkaloids :

Wagner's Test: To 2-3 ml extract with few drops Wagner's reagent. Formation of reddish brown precipitate indicates the presence of alkaloids.

Dragendorff's Tests: To 2-3 ml extract, add few drops Dragendorff's reagent. Formation of orange brown precipitate indicates the presence of alkaloids.

Inference: presence of alkaloid was confirmed

Test for Flavonoids:

Pew's Tests: To 2-3 ml extract, added zinc powder in a test tube, followed by which drop wise addition of concentrate HCl is carried out.

Observation : Formation of purple red or cherry colour indicates the presence of flavonoids

Shinoda Tests: - To 2-3 ml extract, few fragments of magnesium metal were added in a test tube, followed by drop wise addition of concentrate HCl. Formation of magenta colour indicated the presence of flavonoids.
inference : presence of flavonoid was confirmed

Test for Glycosides:

Keller-Kiliani Test: To 2 ml extract, add glacial acetic acid, one drop 5% FeCl and conc. H₂SO₄ observation : Reddish brown color appears at junction of the two liquid layers and upper layer appears bluish green indicates the presence of glycosides.
Inference : glycosides was confirmed

Test for Phenols:

Ellagic Acid Test: The test solution was treated with few drops of 5% (w/v) glacial acetic acid and 5% (w/v) NaNO₂ solution.
Observation : The solution did turned muddy or Niger brown precipitate occurred
inference : phenols were present

Test for Saponin:

Foam Test: The extract was diluted with 20 ml of distilled water and it was shaken in a graduated cylinder for 15 minutes.
Observation : A 1 cm. layer of foam indicated the presence of Saponin.
Inference : presence of saponin is confirmed

Test for Sterols:

Liebermann-Burchard Test: Mix 2ml extract with chloroform. Add 1-2 ml acetic anhydride and 2 drops concentrated H₂SO₄ from the side of the test tube.
Observation : First red, then blue and finally green colour indicated the presence of sterols.
Salkowski Tests: To 2 ml of extract, add 2ml chloroform and 2 ml concentrated H₂SO₄ and was shaken well.

Observation : Chloroform layer appeared red and acid layer showed greenish yellow fluorescence indicated the presence of sterols.
Inference : sterols are confirmed

Test for Tannins:

Gelatin Test: To the extract, gelatin (Gelatin dissolves in warm water immediately) solution was added.
Observation : Formation of white precipitate indicates the presence of tannins.
Inference : tannins were present

Test for carbohydrates:

Molisch test: Treat extract with few drops of alcoholic alpha-naphthol. Add 0.2 ml conc sulphuric acid slowly along the sides of test tube
observation : absence of purple to violet coloured ring formation at the junction of test tubes.
Fehling's Test: Fehling A and Fehling B reagents are mixed and few drops of extract is added and boiled.
Observation : No brick red coloured precipitate of cuprous oxide formed
Note : Carbohydrate was absent in methanolic and ethanolic extracts but a small amount was found in aqueous extracts .

3. Results

The phytochemical analysis of aqueous, methanol, ethanol and water of *HYDNOCARPUS WIGHTIANA BLUME* revealed the presence of phytochemicals in varying proportions . A considerable amount of tannins, phenol, Saponin, flavonoids, glycosides and steroids were found in the aqueous and methanolic extracts while a very less amount of phytochemicals were found in ethanolic extracts . The presence of alkaloid has seen in methanolic and aqueous extract but less in ethanolic extracts. Alkaloids are one of the diverse groups of secondary metabolites found to have antimicrobial activity by inhibiting DNA topoisomerase. Carbohydrate was absent in methanolic and ethanolic extracts but a small amount was found in aqueous extracts . Glycoside is present in varying proportion in methanol, aqueous and ethanol extract. Cardiac glycoside has shown strong positive result for methanol and aqueous extract but weak positive results in ethanol extract. Flavonoids are also known as vitamin P or natural biological modifiers, mildly present in methanolic extract and strongly present in aqueous where as phenol has shown positive result in alcoholic extract compared to aqueous extract.

A direct relationship has been reported between the levels of phenolic compounds and antioxidant potential of plants. Phenolic compounds exhibit their protective action through various mechanisms like preventing the generation of carcinogens from precursors by acting as blocking agents. The compound which possess large amount of flavonoids has found to have inherent ability to modify the body reactions to allergens, viruses and carcinogens. The test for tannin has given positive result in the plant extracts. Flavonoid is present almost in all the three extracts. Flavonoids, also referred to as bioflavonoid, are polyphenol antioxidants found naturally in plants. Saponin are completely present in extracts. The presence of tannin has seen in all the extracts except ethanol . High intake of

tannin, the phenol propyranooids showed reduce in the risk of coronary heart diseases.

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