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Phytochemical Investigation of Medicinal Plant Typha Domingensis Pers. (Typhaceae) in Petroleum Ether Solvent

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ABSTRACT

From last few decades the study of medicinal plants that contains many phytochemicals is very important for human health. Phytochemicals are naturally occurring chemical compounds mostly present in all types of plants. They are the part's of plant immune system and protect the plants from all types of microbial attack i.e.- viruses, bacteria and fungi. On the basis of presence of different types of phytochemicals plants possess anti-bacterial, anti-fungal, anti-viral, anti-oxidant, anti-inflammatory, anti-allergic, anti-microbial and anti-cancer properties. In Ayurveda and Sidha medicines medicinal plants are used to cure different types of human health diseases. *Typha* is a genus of the family-Typhaceae which belongs to the Monocotyledonous group of flowering plants. *Thypha domingensis* Pers. a perennial aquatic herb native of Philippines distributed in tropical and sub-tropical regions of the World. It is a traditional medicinal herb having significant potential to cure different types of human communicable and non- communicable diseases. In the present study the phytochemical analysis of *Thypha domingensis* Pers. in Petrolium ether solvent extract has been investigated.

Keywords: Medicinal plants, Traditional medicines, Human diseases, Phytochemicals.

Introduction:

Since from the pre historic time on the basis of observation of birds and animals that use plants to cure their diseases, humans gained the knowledge of medicinal plants **(Biliana B. Petrovska 2012)**. Human modern lifestyle leading to causes many health diseases. Allopathic medicines often work effectively against the diseases but may show extreme side effects. From the beginning of human civilization it will be observed that the traditional medicines plants are the major source of medicines. Due to increasing human population we have facing number of health problems, recently we faced the COVID -19 pandemic. To cure such infections there is need for survey of medicinal plants and there phytomolecules.

Now days the term 'Alternative Medicine' become very common in western culture, it focus on the idea of using the plants for medicinal purpose. The term of medicinal plants include a various types of plants used in herbalism and some of these plants have medicinal properties to cure infectious communicable human diseases. These plants are rich sources of ingredients which can be used in drug development and synthesis of drugs around the whole World. **(Rasool Hassan 2012)**.

According to WHO 80% of the world population uses herbal medicines.In developing countries WHO has emphasized on the use of locally available medicinal plants. Medicinal plants frequently used as raw material for extraction of active ingredients which used in the synthesis of different drugs. In the field of

pharmacognosy and pharmacology the drug investigations have magnified their importance by revealing the use of medicinal plants for human welfare. Due to the toxicity of antibiotics and synthetic drugs all over the World in developing countries herbal drugs are playing an important role in human health care. This is because they are being natural, always safe and locally available **(Philomena G. 2011).** So from last two decades medicine system has undergoes tremendous changes and go towards the herbal medicines.

Typha domingensis Pers. (Tyhaceae) have a cosmopolitan in distribution. It can be found in wetlands, sedge meadows, along slow moving streams, river banks and lake shores. It is also found in areas of widely fluctuating water levels such as roadside ditches, reservoirs and wet soil areas. **(Marsh L.C. 1959; Saha S.1968 ; Morton J.F 1975).**

Typha domingensis Pers. (Tyhaceae) is also called as Cat tail plant. It is also known to inhibit the growth of other flora around itself thus, promoting research to find out the reasons whether any photochemical which might come out of the roots stopping the growth of other plants. It was reported that some phytotoxins are released which inhibit the germination of other plants in aquatic medium around it (**Duke S.O. and Dayan F.E. 2006**). It is used externally for burns and wound healing. Leaves are diuretic and the pollen is astringent, desiccant, diuretic, haemostatic and vulnerary properties. Pollen is used in the treatment of nose bleeds, haematemesis, haematuria, uterine bleeding, dysmenorrhoeal, postpartum abdominal pain and gastralgia, scrofula and abscesses. It is also contraindicated for pregnant woman. The rootstock is astringent and diuretic (**Esra et al. 2011)**.

During this present study the selected medicinal plant is *Typha domingensis* Pers. (Typhaceae). The leaves are used for the experiment. Typhaceae family is common in the warm temperature and tropical regions of the World. The members belongs to this family are always found in or near water, in marshy places, ponds, lake and depressions. The family has only one genus Typha. The species are tall and can reproduce clonally by submerged rhizomes, forming dense stands at the vegetation places.

Materials and Methods:

Typha domingensis Pers. (Tyhaceae) was collected from nearby the campus of Botanical garden of Yeshwant Mahavidyalaya Nanded was collected for lab work and identified with the help of Flora of Maharashtra Vol. No.V-A **(Almedia M.R. 2009)** and Flora of Marathwada **(Naik V.N. 1998)**. For phytochemical analysis following steps are done as:

a) **Washing:** Collected plant material was washed 2-3 times with distilled water and separated the plant parts i.e. leaves, stem, root and the leaves are dried under shade condition.
b) **Dehydration of water:** To remove dust particles after washing the fresh leaves of Fresh leaves of ***Typha domingensis* Pers.** Kept in shed place for 7-8 days for dehydration of water. After this grinded them to make powder.
c) **Preparation of powder:** These dried plant parts materials were grind and formed a coarse powder. Around 25.00 gm leaves powder obtained after grinding of leaves.
d) **Preparation of plant extracts:** By using Solvent as: Petroleum ether; the powdered forms of leaves get used for extraction with Petroleum ether as a solvent by using Soxhlet extraction method **(Azmir et al. 2013)**. 20gm of dried powdered samples were successively extracted with 100 ml of petroleum ether solvent at (40 to 60°C) The extracts were filtered and evaporated. Thus the obtained extracts were used tested for the presence of various phytochemical components **(Brian and Turner 1975; Sofowora 1982; Harbone 1984).**

e) **Phytochemical Tests:** The different extracts thus obtained were qualitatively tested for the presence of various phytochemical constituents **(Brain and Turner 1975; Sofowora 1982; Treas and Evans1983, Velmurugan et al. 2011; Harbone 1991)**.

1) **Detection of Flavonoids :** A few drops of ferric chloride solution were added to one ml each of above solution. Formation of blackish Red / Orange Red colour indicates the presence of flavonoids. It is shown by + ve symbol and its absence are shown by -ve symbol. The results are presented in the table No.-1.
2) **Detection of Saponins:** A drop of sodium bicarbonate was added in a test tube containing 1-2ml of an aqueous extract. The mixture was shaken vigorously and kept for 3min. a honey comb like was formed and it shows the presence of saponins. It is shown by + ve symbol and its absence is shown by -ve symbol. The results are presented in the table No.-1.
3) **Detection of Tannins:** To the filtrate, a few drops of ferric chloride solution were added. A blackish precipitate indicates the presence of tannins. It is shown by + ve symbol and its absence are shown by -ve symbol. The results are presented in the table No.-1.
4) **Detection of Carbohydrates:** 1ml filtrate + 1ml Barfoed's reagent+ Heated for 2 min. A red precipitate indicates Presence of Carbohydrates (Raaman, 2006; Sadasivam & Manickam 2005). It is shown by + ve symbol and its absence are shown by -ve symbol. The results are presented in the table No. – 1.
5) **Detection of Terpenoid:** 2ml of chloroform and 1ml of conc.H2SO4 was added to 1mg of extract and observed for reddish brown colour that indicates the presence of terpenoid. It is shown by + ve symbol and its absence is shown by -ve symbol. The results are presented in the table No.-1.
6) **Detection of Proteins and Amino acids:** 2ml filtrate + few drops of Millon's reagent a white precipitate indicate the presence of Proteins and Amino acids. It is shown by + ve symbol and its absence are shown by -ve symbol. The results are presented in the table No.-1.

Table No: 1

Test Results of Phytochemical analysis of Medicinal Plant *Typha domingensis* Pers. (Tyhaceae) in Petroleum ether Solvent

S. No.	Tests	Test Results
1.	Flavonoids	+ve
2.	Saponins	+ve
3.	Tannins	+ve
4.	Carbohydrates	+ve
5.	Terpenoids	-ve
6.	Amino acids + Proteins	+ve

Result and Discussion:

In the present study from the Table No.-1 it was observed that the results of phytochemical analysis of leaves extract of medicinal plant *Typha domingensis* Pers. (Tyhaceae) in Petroleum ether solvent confirms the presence of primary and secondary metabolities like Flavonoids, Saponins, Tannins, Carbohydrates and absence of Terpenoids. The presence of these phytomolecules in Petroleum ether solvent suggests that the leaves of *Typha domingensis* Pers. (Tyhaceae) are ethenomedicinally very important and they have remedial capacity against several infectious and non-infectious diseases of

human beings. So in Indian medicine system this plant is used traditionally from ancient time.

Conclusion:

The study reveals the scientific base of the therapeutic uses of medicinal plant *Typha domingensis* Pers. (Tyhaceae) in Petroleum ether solvent provide support for the use of this plant in traditional medicines but the further study is require for the anti-bacterial, anti-fungal, anti-viral, anti-oxidant, anti-inflammatory, anti-allergic, anti-microbial and anti-cancer activity may helpful to young researcher for the discovery of new potential drugs for human welfares.

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