

Typha angustifolia L.- Traditional Ethnomedicinal Plant

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Abstract: *Typha angustifolia* is an aquatic herb that belongs to the monotypic family Typhaceae and is commonly known as narrow leaves cattail. All the parts of the plant have good nutritive and medicinal value. It is a native of North America. Plant parts show primary metabolites as well as secondary metabolites. It has been scientifically proven to show pharmacological activities. This article compiles all the information related to *Typha angustifolia*.

1. INTRODUCTION:

Plants importance is well known. Humans depend on nature for their basic needs like medicines, shelters, food, fragrance, clothing, flavours, fertilizer, and transportation. It has been stated that 250,000-500,000 species of plants are present on earth. The plant kingdom has been a source of medicinal agents for ages (Londonkar *et al.*, 2013). Drugs derived from plants are very easily available, affordable, safe and have fewer side effects. Around 60-80 % of people around the world depend upon the traditional use of medicine. Some plants contain nutrition and as a result that they show their therapeutic values. Plants part such as leaves, root, stem, bark, rhizome, flower, fruit, grain is engaged in the control or treatment of diseases due to that plant contain a bioactive chemical substance. This bioactive compound is sometimes recognized as Phytochemicals (Yadav & Agarwala, 2011)

Typha angustifolia is a versatile herb introduced from Europe to North America. *Typha* spp. is commonly known as 'cattail' in America and 'bullrush' in Europe. This plant is a rhizomatous, perirenal aquatic herb that contains flowers on the narrow stem. This plant's other synonym is narrow leaves cattail. This perirenal herb sometimes forms extensive colonies in the shallow pond and marshy area. They have very small, clustered flowers to form cylindrical inflorescence with male flowers situated above the female flower (Stevens and Hoag, 2000).



2. CLASSIFICATION OF *TYPHA ANGUSTIFOLIA* L.:

- Kingdom: Plantae
- Subkingdom: Tracheobionta
- Superdivision : Spermatophyta
- Division : Magnoliophyta
- Class: Liliopsida
- Subclass: Commelinidae
- Order: Typhales

- Family: Typhaceae
 - Genus: Typha L.
- (According to Bentham and Hooker)

3. PHYTOCHEMICALS :

Most medicinal plants have some kind of biologically active organic compound, which provides a definite physiological action to plants, those substances are known as phytochemicals. (Yadav & Agrawal,2011). Metabolites such as vitamins, terpenoids, phenolic acids, alkaloids, amines etc. These metabolites represent different activities like antioxidant, anti-inflammatory, anti-atherosclerotic, anti-bacterial, anticarcinogenic (Koche et al.,2016).

3.1 Role of Phytochemical:

Class of phytochemicals	Occurrence as natural products (%)	Role in health care
Phenolics	45	Anti-oxidants,anti-cancerous,cytotoxicants,anti-Microbials and vasodilating
Terpenoids and steroids	27	Anti-microbials, detoxifying agents, strengthners, anti- rheumatics,anti-malarial, hepaticidal
Alkaloids	18	Neurophrmaceuticals , anti-cancerous, sedatives, anti-microbials, inscticidal
Other chemicals	10	Anti-inflammatory, immunostimulating

(Koche et al.,2016)

3.2 Classification of phytochemicals:

Phytochemicals are classified into primary metabolites and secondary metabolites according to their role in plants. Primary metabolites are directly muddled in growth, development, and reproduction. Whereas secondary metabolite is not involved in the direct process, they show some ecological function. Primary metabolites contain sugar, amino acids, chlorophyll etc. secondary metabolites include remaining compounds like alkaloids, terpenes, flavonoids, plant steroids, saponins, phenolics, flavonoids and glycosides.

Class of Phytochemicals	Pharmacological activities	Example
Flavonoids	Antioxidant	Quercetin
Terpenoids	Anticancerous	Paclitaxel
Terpenoids	Anti-microbial	Thymol and Carvacrol
Alkaloids	Anti-malarial	Quinine
Terpenes	Anthelmintic	Palasonin
Alkaloids	Stimulant	Caffeine
Alkaloids	Anti-asthma	Ephedrine
Alkaloids	Analgesic	Morphine
Glycoside	Anti-inflammatory	Salicin

Table 1: Review of Phytochemical Screening of different parts of *Typha angustifolia* different solvents.

SR. NO.	PLANT PART	SOLVENT	SECONDARY METABOLITES	AUTHOR WITH YEAR
1.	Rhizome	Petroleum Ether	Alkaloids Sterols	Shukla et al., 2013

			Reducing sugar	
		Benzene	Non	
		chloroform	Alkaloids Sterols Reducing sugar	
		Methanol	Alkaloids Sterols Reducing sugar Flavonoids	
		Aqueous	Alkaloids Sterols Reducing sugar tannins	
	Shoot	Petroleum Ether	Reducing sugar	
		Benzene	Non	
		Chloroform	Non	
		Methanol	Alkaloids Sterols Flavonoids	
		Aqueous	Alkaloids Sterols Reducing sugar Tannins	
	Leaf	Petroleum Ether	Alkaloids Sterols Reducing sugar	
		Benzene	Non	
		chloroform	Sterols	
		Methanol	Alkaloids Sterols Flavonoids	
		Aqueous	Alkaloids Sterols Reducing sugar Tannins	
		Petroleum Ether	Alkaloids Sterols Reducing sugar Tannins	
	Pollen	benzene	Alkaloids Sterols Reducing sugar	
		chloroform	Alkaloids Sterols Reducing sugar	
		Methanol		

		Aqueous	Non Sterols Alkaloids Sterols Flavonoids Alkaloids Sterols Reducing sugar Flavonoids	
2.	Leaves	Aqueous	Saponin Tannin Coumarin Flavonoids	Kasarkar et al.,2017
3.	Pollen	Methanol Ethanol Chloroform Water	phenolic compounds tannins Saponins phenolic compounds tannins Saponins Saponins phenolic compounds tannins Saponins	Ghanghro et al., 2015
4.	Aerial parts	methanol	Phenolic compound	Padalia et al.,2017

4. PHARMACOLOGICAL ACTIVITIES :

Table 2: a review of pharmacological activities of *Typha angustifolia*.

Sr no.	Activity	Plant part	Solvent	Pathogenic organism	Author with year
1	Antimicrobial	Leaves	methanol	Enterobacter aerogenes Salmonella typhimurium Klebsiella pneumonia Pseudomonas aeruginosa Escherichia coli	Londonkar et al.,2013

2.	Anti-thrombolytic activity	Leaves	aqueous, methanol chloroform	Streptokinase	Umesh et al.,2014
3.	Anthelmintic	Leaves	Ethyl alcohol	Pheretima posthuman Ascaridia galli	Anbu et al.,2013
4.	Antibacterial	fibber	Ethanol, Acetone Aqueous	S. aureus, B. subtilis P. aeruginosa B. subtilis, P. aeruginosa, S. aureus, E. coli	Bhutada,2018
5.	immunosuppressive	pollen	Ethanol	Female ICR mice	Feng & sun,2005
6.	Anti-inflammatory	rhizome	methanol	Male Wistar rats	Fruet et al.,2012
7.	Anthelmintic	leaf	ethanol	Pheretima posthuman Ascaridia galli	Anbu et al.,2013
8.	anti-inflammatory	Pollen	methanol	Female Sprague Dawley rats	Varpe et al.,2012

5. SIGNIFICANCE OF *TYPHA ANGUSTIFOLIA*:

All the parts of plants are useful and edible. starchy fibrous rhizome has protein just like maize or rice. This flour provides 266 kcal/100 grams (Morton,1975). The leaf base can be consumed raw. tribes use *Typha* to make pontoons and boats. During World War 2 that was used as an alternative for kapok in life vest jackets. that would be collected for copping warm materials like glass wool or stone wool (Miller,1999). Cattail stems and leaves are used for paper making. Paper is robust but difficult to bleach. *Typha* can be used as a bioenergy crop (Dubbe,1998).flowers can be applied to burns and male inflorescence can be enforced to wounds and ulcers. decoction of leaves used in the cure for diarrhoea.

6.CONCLUSION:

Typha angustifolia is one of the grasses like herb species. The plant has different types of secondary metabolites which have different types of medicinal activities like Antibacterial, Anthelmintic, Anti-thrombolytic, Antimicrobial, Anti-inflammatory, immunosuppressive. So, *Typha angustifolia* is not only a weed species but also used as an ethnomedicinal plant.

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