

Preliminary Phytochemical Analysis of *Typhonium inopinatum* Prain (Araceae: Araceae) - A Promising Medicinal Herb

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Abstract:-

Preliminary phytochemical study of medicinal and ethnobotanically important plant species is an important task for the detection of the bioactive compounds present in the plants which might be responsible for new drug discovery and development. The present study is about the Preliminary phytochemical screening of the crude extract of *Typhonium inopinatum* Prain plant belongs to the family Araceae exposed the occurrence of various bioactive components of which alkaloids, Carbohydrate, Protein, and flavonoids were the mostly prominent.

Keywords: - *Typhonium inopinatum*, Phytochemical, Alkaloid, Flavonoids, Carbohydrates.

Introduction:-

Medicinal plants serve as big source of information for different chemical constituents which could be developed as drugs with precise selectivity. These are the natural lake of potentially useful chemical compounds which could use for the modern drug design (Vijyalakshmi et al., 2012). The major and most useful important bioactive constituents of plants are alkaloids, flavonoids, tannins and phenolic compounds (Doss, 2009). The linkage between the phytoconstituents and the bioactivity of plant is useful to know for the manufacturing of the drugs with specific activities which could help to treat various health ailments and chronic diseases (Pandey et al., 2013). Due to an increasing demand for chemical diversity in screening programs, seeking therapeutic drugs from natural products, interest particularly in edible plants has grown throughout the world. So the aim of the present study is to investigate the edible medicinal plant *Typhonium inopinatum* Prain for their qualitative and quantitative analysis of secondary metabolites.

Typhonium Schott is the largest genus in Araceae family (~70 species), distributed in South Asia, Southeast Asia and Australia (Govaerts et al., 2014). The available information on *Typhonium* species is well-known for its ethnopharmacological uses along with its treatment of cancer from Southeast Asians countries (Khalivulla et al., 2019)

After the critical review on phytochemical studies of *Typhonium* species found that *T. blumei*, *T. flagelliforme*, *T. divaricatum* and *T. giganteum* were extensively studied for the presence of secondary metabolites (Khalivulla et al., 2019) but the information about the phytochemical screening of considered

plant specimen is not found where as this plant specimen *Typhonium inopinatum* Prain is locally used by the tribal peoples as a raw vegetable. Knowing the significance of bioactive compounds, such preliminary phytochemical screening of plants is the need of the era in order to discover and develop novel therapeutic agents with improved efficacy.

Method and Material:

Plant material

The aerial parts (Leaf, Steam and Flower) of *Typhonium inopinatum* Prain were collected in required quantity from the forests of Bhandara district, (latitudes 20⁰39' and 21⁰38' North and longitudes 79⁰27' and 80⁰42' East, Specimen collected by J. V. Gadpayale- JVGBH-0242 (Herbarium voucher specimen number).

The plant specimen is clearly identified with the relevant available literature of Anand Kumar *et al.* (2014) & Gadpayale *et al.*, (2015)

Preparation of the plant extracts

Freshly collected plant materials were washed with distilled water and chopped into small pieces then shade dried so as to bring down the initial large moisture content to enable its prolonged storage life. After drying, they were grinded to powder, which was later used for the preparation of solvents extracts like petroleum ether, chloroform, ethanol, methanol, hot water. Phytochemical tests were carried out on the extract of the powdered specimens using standard procedures (Harbone, 1998; Sadashivam, *et al.*, 2015)

Qualitative Analysis

The crude extract of whole aerial parts of the plant were qualitatively screened for the occurrence of various secondary metabolites such as alkaloids, phenol, flavonoids, tannins, terpenoids, steroids, carotenoids, saponins and glycosides in addition with Carbohydrate and proteins.

Quantitative phytochemical analysis

Quantitative phytochemical analysis was done for the detection of total carbohydrate by Anthrone method, total protein by Bradford method (Sadasivam & Manickam 2015), Tannin, Phenol, Alkaloid (Fazel *et al.*, 2008) and Flavonoids (Boham & Kocipai-Abyazan 1974).

Results and observations:-

A) Morphology of *Typhonium inopinatum* Prain:-

Tuberous perennial herbs, 10-45 cm high; tubers sub-cylindrical, 1-3 × 0.8-1.5 cm. Leaves ovate to triangular or hastate, 5-11 × 4-11 cm; basal lobes orbicular, margin entire, acuminate at apex; secondary veins 6-10 pairs, petioles 5-30 cm long, tinged with purple streaks and spots at base. Inflorescence solitary, Spathes with basal globose to ovoid, convolute tube and an apical limb with a constriction between the two, mostly greenish outside; tube 0.8-2 cm long; limb narrowly ovate to lanceolate, recurved and coiled apically, glabrous, greenish with light purple externally, green with dark purple streaks and spots internally. Spadix 4.3-9 cm long, shorter than spathe limb with a basal pistillate zone followed by a zone of sterile flowers, a naked zone or interstice, a staminate zone and a terminal barren appendix. Both pistillate and sterile flower zones are enclosed by basal tube. Pistillate zone conical, 3-3.5 mm long, greenish; flowers

sessile, 1-1.5 mm long; ovary ellipsoid, 1-1.3 mm long, glabrous; style very short; stigma disc-shaped, c. 0.3 mm diam., glabrous. Sterile flower zone yellow, 2-4.5 mm long; sterile flowers filiform, decurved with entire or bifurcated pointed tip, each 2.5-4 mm long, yellow, partially covering pistillate flower zone. Staminate zone cylindrical, 5-9 × 2-3 mm, pale yellow; flowers sessile, 0.5-1 mm long with 2 thecae; dehiscence by apical short slits or pores.

Flowering & fruiting: May - October.



B) Preliminary phytochemical analysis of aerial parts of *Typhonium inopinatum* Prain:-

The extract obtained after extraction of plant material were carried out for phytochemical screening which revealed the present of various active phytoconstituents. The results are enumerated in Table No. 1.

Table 1: Preliminary phytochemical analysis of *Typhonium inopinatum* Prain:-

Sr. no.	Test	Aerial plant material of <i>Typhonium inopinatum</i> Prain for Preliminary phytochemical analysis in following extracts				
		PE	CL	HW	E	M
1	Phenol	++	---	---	---	---
2	Alkaloid	++	+	+	++	++
3	Tannin	---	+	+	+	+
4	Flavonoids	+	+	+++	++	+
5	Carotenoids	++	+	+	+	+
6	Protein	+	++	+++	++	++
7	Carbohydrate	+++	++	+++	++	++

8	Terpenoids	---	---	---	---	---
9	Glycosides	+	++	++	+	+
10	Saponins	---	---	---	---	---
11	Steroids	+	---	+++	---	---
PE: Petroleum Ether, CL: Chloroform, HW: Hot Water, E: Ethanol, M: Methanol.						

The Preliminary phytochemical analysis of Aerial parts of *Typhonium inopinatum* Prain for in said extracts showed the presence of alkaloids, proteins carbohydrate, Glycosides, flavonoids and steroids mostly whereas the phenols, tannin, terpenoids and saponins found in trace amount.

Conclusions

This work studied the phytochemical composition of different plants parts (Aerial parts) of the *Typhonium inopinatum* by using different solvents extracts. It was observed that all factors affected the chemical composition of the extracts, both quantitatively and qualitatively, concerning their total phytochemical contents. The results obtained for the aerial plant parts, it was clear that the plant is rich in carbohydrate; proteins, alkaloids, glycosides, flavonoids and steroids validating the use of plants for pharmaceutical/ medical purposes. This study may useful for the further pharmaceutical and R& D industry.

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