



PHYSICOCHEMICAL AND PRELIMINARY PHYTOCHEMICAL STUDIES ON *ARISTOLOCHIA INDICA* LINN ROOTS

Satheesh Kumar P^{1,2*} and Senthil Kumar N¹

¹JKK Munirajah Medical Research Foundation's - Annai JKK Sampoorani Ammal College of Pharmacy, Namakkal (DT), B.Komarapalayam, Tamil Nadu - 638 183.

²Department of Pharmacy, Sunrise University, Alwar, Rajasthan, India - 301 030.

ABSTRACT

The present communication attempts to evaluate the physicochemical and preliminary phytochemical studies on the root of *Aristolochia indica* Linn, belongs to family Aristolochiaceae. *Aristolochia indica* is a perennial climber shrub with woody base stocks. The young roots are light brown in color and are fairly smooth. The chemical constitution for *Aristolochia indica* is Aristolic acid, Aristolactam I, Aristololide, Aristolochic acid –I, Cephadione A, Aristolindiquinone. The plant is used as emmenagogue, abortifacient, anti-neoplastic, anti-septic, anti-inflammatory, anti-bacterial and phospholipase A2 inhibitor. The plant is commonly known as snakeroot or birthwort and has been used traditionally for snakebite and postpartum infections respectively. As there is no detailed standardization work reported on root, the physicochemical parameters, preliminary phytochemical constants are carried out. The study revealed specific identities for the particular crude drug which will be useful in identification and control to adulterations of the raw drug.

Key words: *Aristolochia indica* Linn, Physicochemical Studies, Preliminary Phytochemical Studies.

Corresponding Author **P. Satheesh Kumar** Email: satheesh.phyto09@gmail.com

INTRODUCTION

Aristolochia indica Linn (AI), is annual slender herb. A slender perennial twiner. Root 10-12.5 cm long, linear-oblong to obovate-oblong abruptly or gradually obtusely acuminate. The young roots are light brown in color and are fairly smooth. The chemical constitution for *Aristolochia indica* is Aristolic acid, Aristolactam I, Aristololide, Aristolochic acid –I, Cephadione A, Aristolindiquinone. The plant is used as emmenagogue, abortifacient, anti-neoplastic, anti-septic, anti-inflammatory, anti - bacterial and phospholipase A2

inhibitor. The plant is commonly known as snakeroot or birthwort and has been used traditionally for snakebite and postpartum infections respectively. The root is stimulant, tonic and emmenagogue; employed in malarial fever, intermittent fevers and useful in pains in the joints, given to children for flatulence and dyspepsia (Khare CP, 2007; Panda H, 2004; Khare CP, 2016).

MATERIALS AND METHODS

Plant material

Root of *Aristolochia indica* Linn was collected from Kolli Hills, Nammakal District, Tamil Nadu, India. Taxonomic identification was made from botanical survey of India, Coimbatore. The root was stored in the Pharmacognosy Department Herbarium, JKKMMRF's - Annai JKK Sampoorani Ammal College of Pharmacy, B. Komarapalayam, Tamil Nadu.

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Physiochemical screening

The air dried coarse powdered root of *Aristolochia indica* Linn was subjected to the ash values (total ash, water soluble ash, acid insoluble ash, Sulphated ash), extractive values (water soluble extractive value, alcohol soluble extractive values) and also moisture content (loss on drying) (Mukherjee PK, 2002; Kokate CK, 2007; Khandelwal KR, 2007; Evans WC, 2002). All the values were calculated and showed in the table no:1.

Preliminary phytochemical screening

Extraction procedure

The root of *Aristolochia indica* Linn were dried under shade for 15 days and made into a coarse powder with mechanical grinder for further use. The root (500gm) was extracted with petroleum ether (60-800°C) for deffating purpose in soxhlet apparatus and after complete extraction (3 to 4 hrs) the solvent was removed by distillation under reduced pressure and resulting liquid was dried using heating plate at 600°C to get semisolid residue. After the extraction with petroleum ether the same plant material was dried and again extracted with chloroform, ethyl acetate, acetone, ethanol and aqueous by following same procedure (Vinod D Rangari, 2002). All the six values of the plant *Aristolochia indica* Linn root with different solvents were calculated and showed in the table no: 2.

Qualitative phytochemical analysis

One gram of the petroleum ether, chloroform, ethyl acetate, acetone, ethanol, and aqueous extracts of *Aristolochia indica* Linn root were dissolved in 100 ml of its own mother solvents to obtain a stock of concentration 1% (v/v). The extracts thus obtained were subjected to preliminary phytochemical screening (Mukherjee PK, 2002; Kokate CK, 2007; Vinod D Rangari, 2002; Harborne JB, 1998). The result obtained in the present investigation of petroleum ether, chloroform, ethyl acetate, acetone, ethanol and aqueous extracts of the root of *Aristolochia indica* Linn Showed in the table no: 3.

RESULTS AND DISCUSSION

The root of *Aristolochia indica* Linn was collected and analysed the various standardisation parameters. Physico chemical parameters of the root of *Aristolochia indica* Linn are tabulated in Table 1. Preliminary phytochemical screening was performed in the root of *Aristolochia indica* Linn. The roots are extracted with different solvents and the percentage yields are tabulated in the table no: 2. Quantitative phytochemical analysis is performed in the all extracts and the results showed the presence or absence of certain phytochemicals in the drug. Phytochemical test revealed the presence of carbohydrates, glycosides, alkaloids, saponins, flavonoids, tannins & phenolic compound and results are given in table 3.

Table 1. Physico chemical standards of powdered *Aristolochia Indica* Linn root

S.No	Parameters	%(W/W)
1.	Total ash	7.45
2.	Water soluble ash	2.59
3.	Acid insoluble ash	1.36
4.	Sulphated ash	3.50
5.	Water soluble extractive	5.15
6.	Alcohol soluble extractive	8.09
7.	Loss on drying	7.50

Table 2. Extraction values of different extracts of *Aristolochia Indica* Linn root

S.No	Extracts	Yield (Gms)	% Yield (W/W)
1.	<i>Petroleum ether</i>	24	4.8
2.	<i>Chloroform</i>	32	6.4
3.	<i>Ethyl acetate</i>	20	4.0
4.	<i>Acetone</i>	19	3.8
5.	<i>Ethanol</i>	80	16.0
6.	<i>Aqueous</i>	73	14.6

Table 3. Qualitative phytochemical analysis of extracts of *Aristolochia Indica* Linn root

Test of extract	Petroleum ether extract	Chloroform extract	Ethyl acetate extract	Acetone extract	Ethanol extract	Aqueous extract
carbohydrates	+	+	+	+	+	+
Protein & amino acids	-	+	-	-	+	+
glycosides	+	-	+	-	+	-
alkaloids	+	+	-	+	+	+
phytosteriods	-	-	-	-	-	-
Flavonoids	+	-	-	+	+	-
Saponin	+	+	+	+	+	+
Tannins & phenolic compounds	+	+	+	+	+	+
Fixed oils & fats	-	-	-	-	-	-

(+) = indicates presence, (-) = indicates absence

CONCLUSION

Preliminary phytochemical as well as various aspects of the root sample were studied and described along with, physico chemical, phytochemical studies in authentication adulteration for quality control of raw drugs. The root of *Aristolochia indica* Linn exhibits a set of diagnostic characters, which will help to identify the drug in dried condition. It has been concluded from this study that estimation is highly essential for raw drugs or plant parts used for the preparation of compound formulation drugs. The periodic assessment is essential for quality assurance and safer use of herbal drugs.

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CONFLICT OF INTEREST

None.

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