



**PHYTOCHEMICAL SCREENING OF AQUEOUS AND ETHANOL EXTRACTS OF  
AILANTHUS ALTISSIMA AND CLERODENDRON PHLOMIDIS PLANTS LEAVES.**

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**ABSTRACT**

Ailanthus altissima (Maharuk) and Clerodendrum phlomidis (Arni) are mostly found in Vidarbha region, Maharashtra. The present analysis based on preparation of ethanol and water extract of leaves of A. Altissima (Maharuk) and C. Phlomidis (Arni) plants followed by determination of R<sub>f</sub> values for selected contents by thin layer chromatography. Those extracts were qualitatively analyzed for alkaloids, terpenoids, flavonoids, saponin, tannin, glycosides, phenols, anthroquinones, carbohydrates etc.

**KEYWORDS-** Ailanthus altissima, Clerodendrum phlomidis, Phytochemical screening.

**INTRODUCTION**

India is one of herbal plant growing country of the world. These herbal plants were used by people for the treatment of various diseases.<sup>[1]</sup> Traditional “Vaidhyas” in Vidarbha region prescribes fresh leaf juice of Clerodendrum phlomidis with curd for treatment of Bronchitis, heatache, weakness, drowsiness and digestive problems.<sup>[2]</sup> C. Phlomidis is commonly known as Agnimantha is a part of important ayurvedik formulation known as Dashmularishta.<sup>[3]</sup> In Tamil siddha medicin C. Phlomidis Linn is known as Thalangi, Thakkariand vathamatakki.<sup>[4]</sup> C. Phlomidis is also used as treatment of inflammation, diabetes, nervous disorders, asthma, rheumatism, digestive disorders. The agnimantha has been used as herbal larvicides and pupicide<sup>[5]</sup> against malarial vector Anopheles stephensi.<sup>[6]</sup>

Ailanthus altissima is a medium sized tree that reaches heights between 17 and 27 meters. The bark is smooth and light gray. A. Altissima is commonly known as tree of heaven and in China foul smelling tree. The A. altissima tree first brought from China to Europe in 1740 and to the US in 1784.<sup>[7]</sup> It is one of the tree taxa which are considered among the 100 most invasive alien species in Europe. It grows fast in harsh environment condition.<sup>[8]</sup> A. Altissima species is also known as paradise tree, Chinese sumac, stinking sumac or stink tree and the name Aylantho meaning “tree reaching for the sky”.<sup>[9]</sup> The bark of altissima swingle is used in Chinese folk medicine as an astringent, antispasmodic, antihelmintic, antiparasitic and as narcotics.<sup>[10]</sup> Chemical composition of wood of A. Altissima varies with geographical origin, genus and species and found to contain lignin, galactoglucomannan and

arabinoglucoronoxylan etc.<sup>[11]</sup> A. altissima is a rich source of indole alkaloids and bitter quasinoids. Root bark of the plant contains ailanthone, ailanthinone, chparrine etc.<sup>[12]</sup> The present study qualitatively analyzed various phytochemical parameters of the water and ethanol extracts of selected plants.

<b>Discription</b>	<b>C. Phlomidis</b>	<b>A. Altissima</b>
Kingdom	Plantae	Plantae
Order	Lamiales	Sapindales
Family	Lamiaceae	Simaroubaceae
Species	C. Phlomidis	A. Altissima
Common name	Agnimantha	Tree of Heaven
Marathi	Arni	Maharukh

**METHODS AND MATERIALS**

**Preparation of aqueous and ethanolic extract of C. Phlomidis and A. Altissima.**

The leaves of plant were collected from Malkapur Tahsil area and washed with distilled water. Then shade dried at room temperature for 3 days and grind into fine powder. 25 g of shade dried powdered plant leaf sample was sequentially reflux in water and ethanol and up to 2 h. The extracted samples were concentrated by distillation for distilled out the solvent. The dried extracts were weighed and preserved at 4°C in refrigerator for further study.

**Phytochemical screening of leaves extracts**

Aqueous and ethanolic extracts of Clerodendron Phlomidis and Ailanthus Altissima leaves were subjected to preliminary phytochemical screening for the presence or absence of various active bio-components like Alkaloids, Flavonoids, Terpenoids, Saponin, Tannin,

Carbohydrate, Anthroquinone, Glycosides, steroids, Phenols, Gums, protein and Amino acids by using standard methods.<sup>[13-19]</sup>

### RESULT AND DISCUSSION

The phytochemical analysis (table no-1) of the leaves extracts of the selected plants revealed that the Alkaloids, Flavonoids, Terpenoids, Saponin, Tannin, Phenols and Glycosides were shown positive result whereas Anthroquinone and Gums were shown negative result in the ethanol and water extracts of both plants. Carbohydrate content was found to present in both plants except ethanol extract of *C. Phlomidis* leaves. Proteins and Amino acids were present in water extract of *C.*

*Phlomidis* and ethanol extract of *A. Altissima* leaves. Steroid was found to present in ethanol extract of *C. Phlomidis* and *A. Altissima* leaves. The Rf values of Alkaloids, Flavonoids, Terpenoids, Saponin were determined by Thin layer Chromatography. The results and solvent system used are represented in table no-2 and 3. The highest Rf value (0.72) determined for terpenoids for the ethanol extract of *Ailanthus Altissima* leaves. The lowest Rf value recorded for alkaloids of ethanol extract of *C. Phlomidis* plant leaves. The functional groups like aldehydes, ketones, amines, nitro, acids and alcohols were also present in various extracts of selected plant. These test was determined by simple organic functional group analysis and reported in table no-4.

**Table No-1: Qualitative analysis of leaves of selected plants.**

Sr. No	Constituents	Clerodendrun Phlomidis		Ailanthus Altissima	
		Ethanol Extract	Water Extract	Ethanol Extract	Water Extract
1	Alkaloids	+	+	+	+
2	Flavonoids	+	+	+	+
3	Terpenoides	+	+	+	+
4	Saponin	+	+	+	+
5	Tannin	+	+	+	+
6	Carbohydrates	-	+	+	+
7	Phenols	+	+	+	+
8	Amino acids & Proteins	-	+	+	-
9	Anthroquinones	-	-	-	-
10	Glycosides	+	+	+	+
11	Steroids	+	-	+	-
12	Gums	-	-	-	-

**Table No-2: Rf Values of some constituents from leaves of selected plants by TLC.**

Sr. No	Constituents	Rf Value Clerodendrun Phlomidis		Rf Value Ailanthus Altissima	
		Ethanol Extract	Water Extract	Ethanol Extract	Water Extract
1	Alkaloids	0.43	0.51	0.57	0.59
2	Flavonoids	0.50	0.64	0.70	0.66
3	Terpenoides	0.46	0.58	0.72	0.54
4	Saponin	0.56	0.68	0.47	0.52

**Table No-3: Solvent system and Spraying agents with color developed.**

Constituent	Solvent system	Spraying Agent	Color developed
Alkaloids	NH <sub>4</sub> OH:CH <sub>3</sub> OH 3:17	Mayer's reagent	Yellowish
Flavonoids	CHCl <sub>3</sub> :CH <sub>3</sub> OH 18:2	Iodine vapors	Reddish
Terpenoids	C <sub>6</sub> H <sub>6</sub> :CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub> 1:1	10% HS <sub>2</sub> O <sub>4</sub>	Greenish
Saponin	CHCl <sub>3</sub> :CH <sub>3</sub> COOH: CH <sub>3</sub> OH:H <sub>2</sub> O 6:2:1:1	Iodine vapors	Brown

Table No-4: Functional group Tests.

Sr. No	Functional group	Clerodendrum Phlomidis		Ailanthus Altissima	
		Ethanol Extract	Water Extract	Ethanol Extract	Water Extract
1	-COOH	+nt	-nt	+nt	+nt
2	-OH	+nt	-nt	+nt	-nt
3	-CHO	-nt	+nt	-nt	-nt
4	-CO-	-nt	-nt	-nt	-nt
5	-NH <sub>2</sub>	+nt	+nt	+nt	+nt
5	-NO <sub>2</sub>	+nt	+nt	-nt	+nt

+nt- Present -nt- Absent

**CONCLUSION**

It has been concluded from the present study that selected plants contains various biologically active constituents. Phytochemical screening tests of the biologically active constituents may lead to the drug discovery and development. We would like to suggest that the selected plants may be effective against diabetes, as germicide and other human disorders.

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