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PRELIMINARY PHYTOCHEMICAL ANALYSIS OF LEAF EXTRACTS OF DELONIX ELATA

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Abstract: Aim: The aim of the present study is to analyze the phytochemical constituents present in the leaves of Delonix elata extracted with five different solvents. **Materials and Methods:** The leaves of Delonix elata was collected, shade dried and extracted with aqueous, ethanol, chloroform, petroleum ether and acetone. The resultant extract was tested for the presence of phenols, cyanins, quinones, terpenoides, tannins, flavonoids, steroids and glycosides using standard procedures. **Results:** Aqueous extract was found to be most effective followed by ethanol and the chloroform extract was least effective. **Conclusion:** Aqueous extract of Delonix elata is found to be rich in phytochemical constituents and can be used for obtaining therapeutic benefits.

Keywords: Delonix elata; Fabaceae; Inflammation; Phytochemistry

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INTRODUCTION

Delonix elata (Syn. Poinciana elata Linn) is a deciduous tree distributed well within the Indian sub-continent, belonging to the order Caesalpinioideae (family Fabaceae) and characterized by its poor stem form and drooping branches. It is commonly called as white Gulmohar, as it bears creamy white flowers and has got many regional names like Sidhasaru, Vadanarayanam and Sandesra due to its wide distribution in the sub-continent. Delonix elata is a plant of high medicinal value as its bark extract is used as a febrifuge and anti-periodic and the leaf-bark paste is used to alleviate inflammation[1] as it is said to have anti-inflammatory, antioxidative and antibacterial activity.[2] Hence a preliminary study was done to know the phytochemical constituents of leaf extracts of Delonix elata.

Leaves of the plant Delonix elata were collected during the month of September, 2013 in and around Chennai and got authenticated from Mrs. Seetha Lakshmi, Professor and Head, SDNB Vaishnava Arts and Science Women's College, Chennai and a voucher specimen (SLA – 15)was deposited in the herbarium. The collected leaves was dried in shade and made into fine powder and used for the study.

Extraction was done according to the technique described by Pizzale et al,[3] Lu and Foo .[4] 15g of dried leaf powder was extracted with 150ml of methanol (75%), chloroform, petroleum ether, acetone and deionized water for 1 minute using an ultra tura mixture (13000 rpm) and soaked overnight at room temperature. The sample was then filtered through Whatmann no.1 filter paper in a Buchner funnel. The filtered solution was evaporated under vacuum in a Rotavapor at 40 degree Celsius to a constant weight and dissolved in order to get constant weight and was dissolved in methanol, ethanol and water. The dissolving rate of the crude extracts was approximately 100% and the solution was stored at 4 degree Celsius until use. [5].

The phyto chemical analysis of the leaf extracts of D. eleta was done according to a standard technique.[6,7] The extracts were tested for the presence of flavonoids, saponins, alkaloids, tannins, coumarins, terpenoides, glycosides, cardiac glycosides and phenols.

The leaves of the plant Delonix elata was extracted with five solvents namely ethanol, chloroform, petroleum ether, acetone, and aqueous. It can be seen from the table 1 that all the extracts contained one or more of the active phytochemical constituents. Aqueous extract contains all the constituents except anthocyanins and hence found to be more effective than the other extracts. The least effective extract is chloroform which contained only phenol. The constituents of the other extracts varied in between.

Phytochemistry is the scientific study of the chemicals found in plants. The chemical constituents which are synthesized by the plants impart to them the various biologic activities

like anti-oxidant, anti-inflammatory, antibacterial etc.; thus a sound knowledge of the phytochemicals in each plant is essential for effective use of the plant in the field of modern medicine.

Delonix elata finds a wide application in traditional Indian medicine. It has found to have potent anti-inflammatory, anti-bacterial, antioxidant, chelating, larvicidal and ovicidal activity.[8] These medicinal properties can be attributed to the phytochemical constituents present in the plant parts. Study by Parekh et al [9] has shown the presence of beta-sitosterol and carotenoids in the bark extracts of D. elata.

In our study, we found out that aqueous extract of D. elata is most effective than the other extracts followed by ethanolic extract, and the extract found to be least effective is the choloform extract.

Phenols and tannins are present in all the all extracts studied. Whereas phenols confer antimicrobial activity to the plant extracts, [10] tannins are well known antiseptics and also make the plants to be used for improving the rate of wound healing.[11]

Quinones and alkaloids were present in all the extracts studied except that of chloroform. Alkaloids have pharmacological applications such as anaesthetic agents and nervous system stimulants. [12]

Terpenoides were present in aqueous, ethanolic and acetone extract. Terpenoides impart to the plant extract an anti-inflammatory, sedative, insecticidal and cytotoxic activities. Presence of flavonoids indicates potent anti-oxidant activity and anti-cancer activity which is found only in aqueous extract.[13]

Anthocyanins were not found in any of the extracts analyzed.

Thus, this preliminary data clearly explains the various phytochemicals seen in various extracts and shows that aqueous extract can be taken for further studies to identify the various phytochemical components responsible for these activities. Further studies are in the progress and will be reported in the near future.

Table 1: Phytochemical screening of *Delonix elata* leaf extracts

Phytochemicals Tested	Leaf Extracts of *Delonix*				
	Aqueous	Ethanol	Chloroform	Petroleum ether	Acetone
Tannins	+	+	+	+	+
Saponins	+	-	-	-	-
Quinones	+	+	-	+	+
Terpenoids	+	+	-	-	+
Steroids	+	+	-	-	-
Flavonoids	+	-	-	-	-
Phenol	+	+	+	+	+
Alkaloids	+	+	-	+	+
Glycosides	+	-	-	-	-
Cardiac glycosides	+	+	-	+	-
Coumarins	+	-	-	-	-
Antho cyanin	-	-	-	-	-
Beta cyanin	+	-	-	-	-

+ = positive

- = negative

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