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Qualitative Phytochemical Analysis on *Cordia Obliqua* Willd.

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Abstract: *Cordia obliqua* is a member of the Codiaceae family.It is a small, fast-growing, perennial tree. This plant is used as an antimicrobial, hypotensive, respiratory stimulant, and anti-inflammatory medication. It also possesses antibacterial and antifungal properties. Fresh parts of the *Cordia obliqua* plant, including the stem, petiole, leaf, and bark, were gathered separately in large quantities. These parts were then dried in the shade and ground into a coarse powder.The powdered plant material, totaling 75 grams, was extracted using ethanol for 48 hours through a process known as cold maceration. These extracts were then used for preliminary phytochemical analysis. The ethanolic extracts of *Cordia obliqua* showed positive results in several phytochemical tests. The compounds identified in the extract include alkaloids, phenols, terpenes, saponins, tannins, glycosides, flavonoids, and steroids. From this study, it can be concluded that these compounds are important secondary metabolites and are likely responsible for the medicinal properties of the plant.

Keywords: *Cordia obliqua*, Codiaceae, phytochemical, secondary metabolites.

INTRODUCTION

Cordia obliqua, the clammy cherry, belongs to the family Codiaceae. It is a fast-growing, small, perennial tree. It produces fruit its colour is yellow or shining pinkish- yellow. The flowering season starts in April and ends in the month of May. The fruiting season begins in the July and ends in the months of August. It is grown in tropical and sub- tropical regions. It is used in traditional medicine: the fruits can be used as an expectorant, for coughs and for lung diseases. The raw fruits are used as a vegetable. A very good pickle of raw fruits is also made. The mucilaginous substance of the fruit can be used as a gum for pasting sheets of paper or cardboard (Parmar and Kasual, 1982). Some pharmacological activities on *Cordia obliqua* shows that the presence of alkaloids, flavonoids, tannin , reducing sugar, etc., are used antimicrobial, hypotensive, respiratory stimulant and anti- inflammatory drug. It also has anti-bacterial and anti-fungal properties.

Sivakrishnan (2018) gave a broad explanation about the methanolic extracts of the seeds and leaves of *Cordia obliqua* exhibit anti-microbial activity against gram positive bacteria like *Streptococcus mitis* and gram negative bacteria forsythus. Richa and Ghanshyam (2015) explained that according for the traditional system, it passes antihelmintic, purgative, diuretic, expectorant, antipyretic, hepatoprotective and analgesic action. Singh *et al* ., identified the *Cordia obliqua* as an immunomodulator, anti diabetic, antihelmintic, diuretic and hepatoprotective. Hence this research is carried out to study the qualitative phytochemical analysis on *Cordia obliqua*

MATERIALS AND METHODS

Plant materials

The whole plants of *Cordia obliqua* were collected from our campusThe Flora of Presidency of Madras (Gamble, 1997) and Flora of British India (Hooker, 1872) were referred for the identification of the chosen plants.

Preparation of extracts

Fresh plant materials of the *Cordia obliqua* stem, petiole, leaf and bark were collected separately in bulk, washed under running tap water to remove adhering dirt followed by rinsing with distilled water. The plant material was then shade dried and pulverized in a mechanical grinder followed by sieving (sieve no.40) to obtain coarse powder. The powdered plant materials (75 gm) were extracted with ethanol for 48 hrs in a method called cold maceration. These extracts were used in the preliminary phytochemical analysis.

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Qualitative organic analysis:
The ethanolic extracts of the stem, petiole, leaf, and bark were subjected to qualitative phytochemical analysis following the methods described by Overton (1963) and Harborne (1998).

The following tests were carried out.

Alkaloid:
A few mg of the substance in acetic acid was treated with two drops of Dragen dorff's reagent. The formation of a red or orange precipitate indicated the presence of alkaloids. Excess reagent was avoided.

Phenol:
A few milligrams of the sample were dissolved in alcohol and treated with alcoholic ferric chloride solution. Any coloration indicated the presence of phenolic compounds.

Terpenoid
A few milligrams of the sample were placed in a dry test tube, treated with a small piece of tin foil and 0.5 mL of ferric chloride solution, and then heated gently. Pink colour showed the presence of terpenoid.

Test for saponin
Approximately 2 mg of the powdered sample was boiled with 2 mL of distilled water in a water bath and then filtered. Ten millilitres of the filtrate were mixed with 5 mL of distilled water and shaken vigorously to observe the formation of a stable, persistent froth. The froth was mixed with three drops of olive oil, shaken vigorously, and observed for the formation of an emulsion.

Tannin:
A few mg of the substance in alcohol was treated with a few drops of lead acetate. Precipitation indicated the presence of tannins.

Sugars/Glucosides:
A few mg of the substance was mixed with equal quantity of Anthrone and treated with two drops of conc.H_2SO_4. It was then heated gently on a waterbath. Dark green colour indicated the presence of sugar/glucosides.

Flavonoid
A few milligrams of the sample were dissolved in alcohol and treated with magnesium turnings followed by the addition of a few drops of concentrated hydrochloric acid. Red or Pink colour indicated the presence of flavonoid.

Liebermann-Burchard test: (Steroid)
A few milligrams of the sample were dissolved in chloroform and treated with a few drops of acetic acid, acetic anhydride, and two drops of concentrated sulfuric acid, followed by gentle heating. Blue (or) green colour showed the presence of steroid.

RESULTS

The test results of qualitative phytochemical analysis on *Cordia obliqua* plant is tabulated below.

Qualitative Phytochemical analysis on *Cordia obliqua*

		BARK	STEM	LEAF	PETIOLE
1.	Alkaloids	+	+	+	+
2.	Phenolic compounds	+	+	+	+
3.	Terpenoids	+	+	-	+
4.	Saponins	-	-	-	+
5.	Tannins	-	+	+	-
6.	Glycosides	+	-	-	-
7.	Flavonoids	+	+	-	+
8.	Steroids	-	-	-	-

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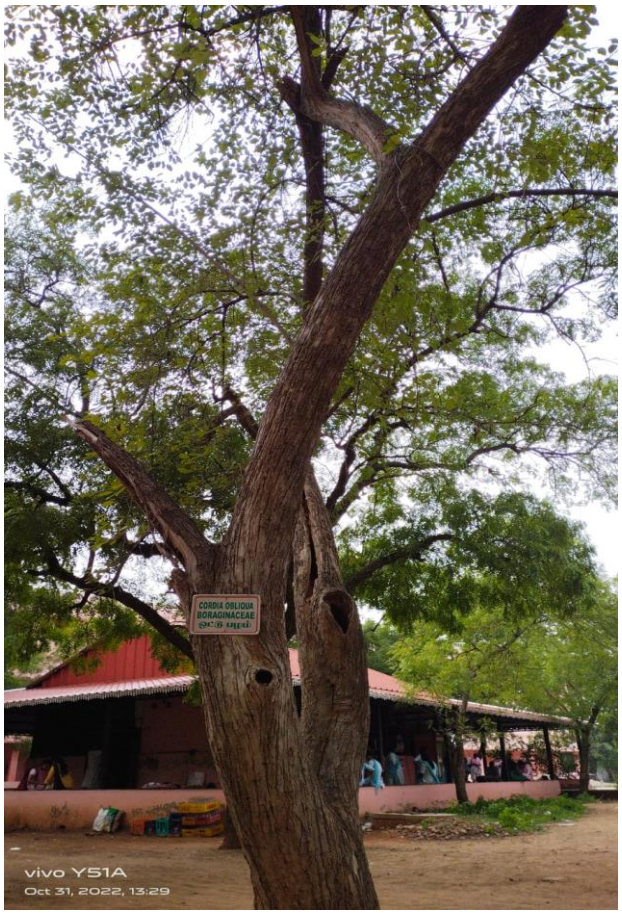
In qualitative analysis of ethanolic extracts of *Cordia obliqua* exhibited positive results for nine phytochemical tests (Table 1). Phytochemical compounds such as alkaloids, phenol, terpenes, saponin, tannin, glycosides, flavonoids and steroids were screened in the extract. Although, among these compounds alkaloids, phenolic compounds, flavonoids, saponins and tannins are important secondary metabolites and are responsible principles for medicinal values of the respective plant.

Habit

Cordia obliqua

A Twig



Petiole

Stem

Bark

Leaf

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DISCUSSION

Plants that have biological activities usually contain secondary metabolites which are chemical substances responsible for such activities. Alkaloids play a significant role in medicine and comprise many of the most valuable therapeutic compounds. They have marked physiological effect on animals (Edeoga, 2005). Alkaloids has addictive or pain killing or poisonous effect and sometimes help to cure some ailments. The presence of phenolic compounds in the extracts of *Cordia obliqua* contributes to their antiseptic properties and helps reduce inflammation when administered internally. These bioactive agents have an irritant effect when applied to the skin (Persinos and Quimby 1967). Phytochemical screening of the ethanolic extracts of *Cordia obliqua* shows the presence of saponin which are characterised by their bitter or astringent taste, foaming properties and their haemolytic effect on red blood cells (Van-Burden, and Robinson, 1981 & Prohp and Onoagbe 2012). Steroids were found to be present in the sample. Steroidal compounds are of importance and interest in pharmacy due to their relationship with compounds such as sex hormones (Okwu, 2001). Flavonoids are water-soluble polyphenolic compounds and are classified as members of the polyphenol family. Together with carotenes, flavonoids are also responsible for the coloring of fruits, vegetables and Herbs. Flavonoids have antioxidant activities as well as much health promoting effects such as anti-allergic, anti-cancer, antioxidant, antiinflammatory, anti-thrombotic, vasoprotective, tumour inhibitory and anti-viral effects. TThese effects are attributed to the influence of flavonoids on arachidonic acid metabolism. Some flavonoid containing plants are diuretics, antispasmodic and others have antimicrobial properties (Trease and Evans, 2002). The usefulness of flavonoids as hypoglycaemic and anti-diabetic has been documented (Tanko *et al*., 2007). These may makes Cordia obliqua ethanolic extracts in the management of diabetes mellitus. Okwa and Josiah (2006) have documented and important of tannin in promoting wound healing. Iwu (1983) also reported that tannins possess antidiabetic properties.

CONCLUSION

Cordia obliqua willd. is a well-known and commonly found trees. It has numerous medicinal properties. The findings of this study revealed that the ethanolic extracts of *Cordia obliqua* contain a variety of phytochemicals. Specifically, the leaf extract was found to contain alkaloids, phenolic compounds, and tannins.Bark of *Cordia obliqua* contains alkaloids, phenolic Compounds, terpenoids, tannins and flavanoids. Petiole of *Cordia obliqua* contains alkaloids, phenolic compounds, terpenoids, saponins and flavonoids.

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