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Phytochemical and Biochemical analysis of The Plant Extract of *Nyctanthes arbor-tristis* Linn

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ABSTRACT

Earth is a planet conquered by plants. Extensively used in Ayurveda medicine for the treatment of various diseases is *Nyctanthes arbor-tristis* Linn. Present study involves phytochemical screening and biochemical test for *Nyctanthes arbor-tristis* Linn. The crude drug powder extracts of the bark of the above plant was taken for the study. A qualitative phytochemical analysis was performed by using different solvents used for the presence of Alkaloids, Flavanoids, Glycosides, Phenol, Protien, Saponin, Tannin, Carbohydrate and Terpenoids. The Phytochemical Screening is done for the selected plants. Different examination revealed the presence of biologically active compounds and chemicals exhibited changes in reactivity of powders. The biochemical parameters such as protein, Total sugar, Reducing sugar, Amino acid, Starch were assessed using standard procedures.

KEY WORDS: Phytochemicals , *Nyctanthes arbor-tristis* Linn , Biochemical.

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INTRODUCTION

Awareness of the chemical constituent of plants is advantageous for the discovery of therapeutic agents and in discovering the actual value of folklore remedies. Traditionally, screening methods have been used to study the pharmacological effects of phytochemical compounds. This is useful plants in India, extensively used in ayurvedic medicine for the treatment of various diseases is *Nyctanthes arbor-tristis* Linn belongs to the family Oleaceae, and distributed widely in sub – Himalayan region. The barks are intended for expectorant, anorexia, liver disorder, piles, worm infestation, blood disorder, oliguria, skin diseases fever and snake bite²⁻¹⁰. The stem bark is made into powder form and given in rheumatic joint pain, in treatment of malaria and also used as an expectorant .The leaves of *Nyctanthes arbor-tristis* Linn are used for the treatment of various diseases such as sciatica, chronic fever, rheumatism, and internal worm infections, and as a laxative, diaphoretic, diuretic, and many other treatments. The seeds are useful as anthelmintics and in treatment of alopecia, it is antibilious and an expectorant, and is also useful in bilious fevers¹⁻¹¹.

2. MATERIALS AND METHODS:

2.1 sample collection and preparation:

Nyctanthes arbor-tristis Linn bark were collected from Banaskantha district, Palanpur, India in the month of The plants bark selected for the study was washed, air dried and powdered. The dried bark powdered was used for preparation of extracts in polar and non polar solvents.

2.2 preparation of the extract:

About 10 gram (g) of dried powder samples were weighed and extraction process was carried out by using 100 milliliter (ml), ml each the following of solvent (Methanol, Ethanol, Petroleum ether, Chloroform and Distilled Water) in cold extraction method. The extract was concentrated by evaporation at room temperature overnight and then air dried. The concentrated extract were made in to a fine powder form and stored at room temperature prior to phytochemical screening.

2.3 phytochemical and biochemical analysis:

The phytochemical tests were carried out using different solvents extracts using standard procedures to identify the constituents as described by Harbone.J.U 1973. To assess the activity of this plant, preliminary phytochemical analysis studies and phytochemical analysis were carried out. The biochemical parameters like Protein, Total reducing sugar, Total soluble sugar, Amino acid. And Starch were analysed¹³⁻¹⁶.

3. RESULTS AND DISCUSSION:

The shade dried bark of *Nyctanthes arbor-tristis* Linn was powdered and successfully extracted with different solvents and the yields are calculated (Table 1). The extracts are subjected to preliminary phytochemical test to find out the active constituents and the data are given in (Table 2.) It revealed that presence of alkaloids, carbohydrate, glycosides, phytosterols, fixed oil, tannins, flavonoids, proteins and amino acids, gums and mucilage. The preliminary phytochemical investigation of *Nyctanthes arbor-tristis* Linn ethanomedicinal plants on Banaskantha district showed the presence of all the phytochemicals in different solvents.

Table 1: Yield Extractive value of extracts of *Nyctanthes arbor-tristis* Linn bark

Sr no.	Name of Tree	Yield value (ME)	Yield value (EE)	Yield value (DE)	Yield value (PE)	Yield value (CE)
(1)	<i>Nyctanthes arbor-tristis</i> Linn (Bark)	5.85%	12.26%	9.6%	10.5%	8.6%

(Note ME: Methanolic extract, EE: Ethanolic extract, DE: Distilled water extract, PE: Petroleum ether extract, CE: Chloroform extract)

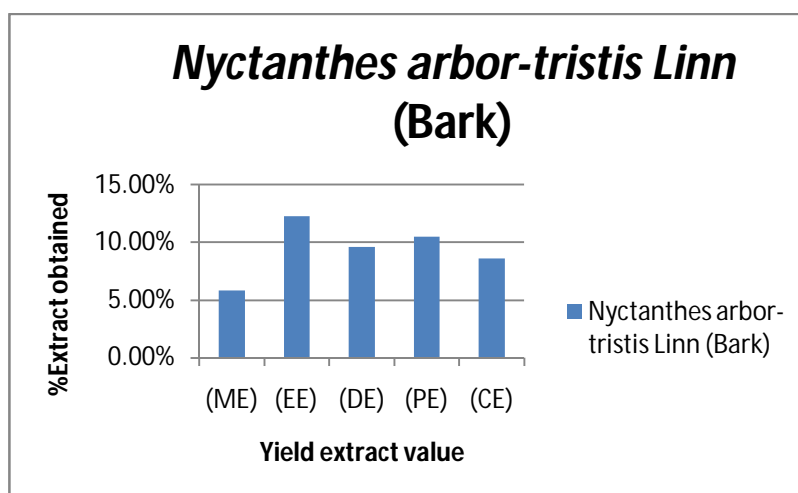


Figure 1: Yield Extractive Value for *Nyctanthes arbor-tristis* Linn bark

Table 2: Qualitative Phytochemical analysis of *Nyctanthes arbortristis* Linn bark

Sr.	Phytochemical	Test	Methanol	Ethanol	D.W	Pet. ether	Chloroform
(1)	Alkaloid	Hagers test	+	+	+	+	+
		Wagners test	+	+	+	+	+
		Dragandrof reagent test	+	+	+	+	+
(2)	Flavonoids	lead acetate Reagent Test	+	+	-	-	-
		H ₂ SO ₄ Test	+	+	-	+	+
		Alkaline Test	+	+	+	+	+
		Zinc Test	-	-	-	-	-
(3)	Phenols	Ferric Chloride Test	-	-	-	-	-
		Lead Acetate Test	+	+	+	+	+
		Potassium Dichromate Test	-	-	-	-	-
		Alkaline Reagent Test	+	+	+	-	-
(4)	Tannins	Ferric chloride Test	+	-	-	-	-
		Lead acetate Test	+	+	+	+	+
		Potassium dichromate Test	+	+	+	+	+
(5)	Saponins	Frothing Test	+	+	+	+	+
(6)	Steroids	Libermann Buchard Test	-	-	-	+	+
		Libermann sterol Test	-	-	-	+	+
		Salkowaski Test	+	+	+	-	-
		Copper acetate Test	+	+	-	-	-
(7)	Glycosides	Keller - Killiani Test	-	-	-	-	-
		Bromine H ₂ O	-	-	+	-	+
(8)	Sugar/Carbohydrates	Molisch's Test	+	+	+	+	+
		Fehling's Test	-	-	-	-	-
		Benedict's Test	-	-	-	-	-
(9)	Protein/ Amino acids	Iodine Test	-	-	-	-	-
		Millon's Test	-	-	-	-	-
		Ninhydrin Test	-	+	-	-	-
		Xanthoproteic Test	-	-	-	-	-

(+): Present, (-): Absent

The preliminary phytochemical investigation of selected ethano-medicinal plant showed the presence of all phytochemicals Alkaloid, Flavonoids, phenolics, Tannins, saponin, Steroids, Glycosides, Sugar (Carbohydrates) and Protein/Amino acid respectively are present in different solvents like Methanol, Ethanol, Petroleum ether, Distilled water, Chloroform¹².

3.1 Biochemical parameters tests of plant:

3.1.1 Total sugar:

Biochemical studies on the bark powder on the plant *Nyctanthes arbor-tristis Linn* revealed that the Total sugar content has been found to be 1.257 mg per 1ml (Table 03). Total sugar was quantified based on the standard protocol given by (Nelson somogyi, N. (1944))

3.1.2 Reducing sugar:

100 mg of the powder of *Nyctanthes arbor-tristis Linn* bark showed presence of 1.249mg/ml reducing sugars. (Table 03). Reducing sugar was quantified based on the standard protocol given by Nelson somogyi, N. (1944). Amount of total soluble sugar and reducing sugar present in extracts and dried powders of *Nyctanthes arbor-tristis Linn* was observed in (Table 03).

3.1.3 Protein

Biochemical studies on the bark powder on the plant *Nyctanthes arbor-tristis Linn* revealed that the protein content has been found to be 0.0646 mg per 1ml (Table 03). Protein was quantified based on the standard protocol given by (Lowry et al., 1951).

3.1.4 Amino acid:

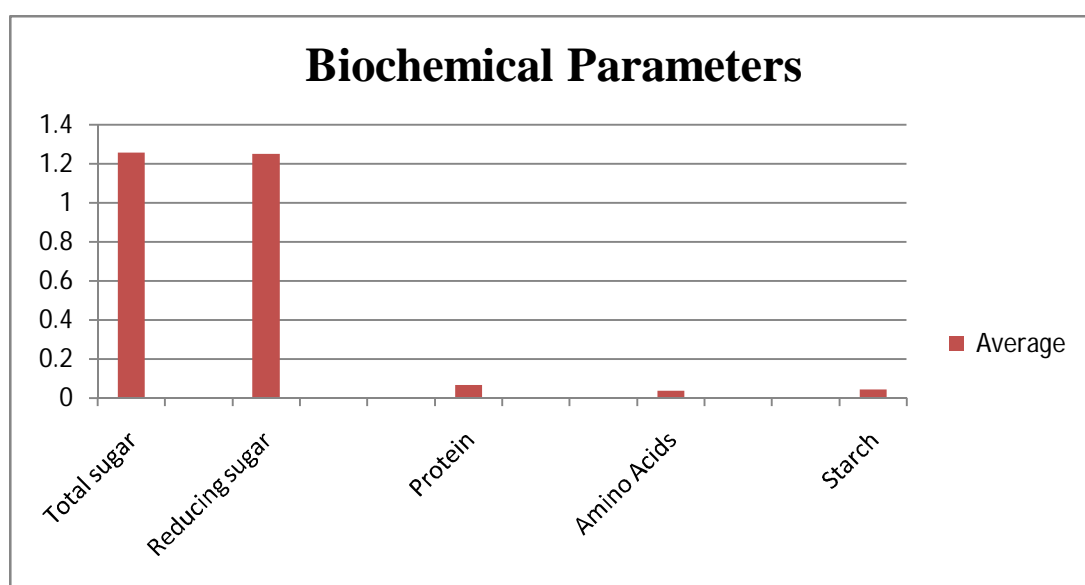
The total Amino acid content in *Nyctanthes arbor-tristis Linn* has been found to be 0.0356 mg per ml. (Table 03). Amino acid was quantified based on the standard protocol given by Y.P and Takashashi, T. (1966).

3.1.5 Starch:

100 mg of the powder of *Nyctanthes arbor-tristis Linn* bark showed 0.0416mg/ml Starch content. (Table 03). Starch was quantified based on the standard protocol given by Chinoy, J.J (1939)

Table 3. Showing estimation of different Biochemical test concentration in the bark of *Nyctanthes arbor-tristis* Linn

Sr no.	Biochemical estimation	Mean con in Average \pm S.D
(1)	Total sugar	1.257 \pm 0.247
(2)	Reducing sugar	1.2493 \pm 0.247
(3)	Protein	0.0646 \pm 0.0025
(4)	Amino Acids	0.0356 \pm 0.0077
(5)	Starch	0.0416 \pm 0.0049

**Figure : 2 Showing Total sugar, Reducing sugar , Protein , Amino acid , Starch(mg/ml) Dry powdered) in bark of *Nyctanthes arbor-tristis* Linn****CONCLUSION:**

Nyctanthes arbor-tristis Linn is as yet no documented report on this plant's content with different solvents and other issues that the community frequently and extensively using for treatment of various diseases. As the powders of the test plant were treated with different tests in different solvents like Methanol, Ethanol, distilled water, Petroleum ether and Chloroform the colour changes were observed in the treated powders and the colour varied. The phytochemical screening of the test plant was done for their active components present for their medicinal values. In presents study we can conclude that the selected plants extracts were showing presence of many secondary metabolites are present. The screening of phytochemical constituents of plants *Nyctanthes arbor-tristis* Linn indicated the presence of Flavonoids ,Saponin and alkaloids in common. In this study of the plant in *Nyctanthes arbor-tristis* Linn better results in Methanol and Ethanol and Chloroform solvents were

observe many of the phytochemical analysis showed positive results. The biochemical analysis of the test plant showed the maximum Reducing sugar and Total sugar content compared to Amino acid, Protein and Starch. The presence of total soluble sugars is higher than the reducing sugar. The presence of Protein content is higher than the Starch and Amino acid.

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