

Evaluation of In-Vitro Anti-Oxidant Activity of Nyctanthes Arbortristis by using DPPH Assay

Manisha Lavate^{1*}, Lonkar Vidya², Trivedi Vipul³

Assistant Professor

Department of Pharmacology^{1,2}, Department of Pharmaceutical Chemistry³

Dattakala College of Pharmacy, Swami-Chicholi, Bhigwan, Pune 413130

Corresponding Author's Email id: - manishalavate78@gmail.com^{1*}

Abstract

In this present study, an attempt was taken to investigate the antioxidant activity of Nyctanthes arbortristis. The water-soluble fraction of its extract showed impressive antioxidant activity, as revealed by in vitro experiment of DPPH scavenging assay. The strong reducing power with high phenolic and flavonoid contents responsible for the antioxidant activity.

Keywords: - *Antioxidant activity, Nyctanthes arbortristis, DPPH scavenging assay.*

INTRODUCTION

Medicinal plants are the most exclusive sources of life-saving drugs for the majority of the world's population. Natural products have traditionally played a pivotal role in drug discovery that make the compounds of interest in the development of active anti-hypertensive pharmaceutical agents. Nyctanthes arbortristis (Oleaceae) is a mythological plant and possesses high medicinal values in Ayurveda. Nyctanthes arbortristis, commonly known as Night jasmine or

coral jasmine characterized by the presence of phenylethanoid derivatives and iridoid glucosides. Earlier studies on this plant have resulted in the isolation of a number of glycosides from leaves, seeds and flowers. Leaves contain tannic acid, methyl salicylate, amorphous glucosides, mannitol, resin, ascorbic acid, carotene and traces of volatile oil along with β -amyryn, β -sitosterol, nyctanthic acid and iridoid glucosides, arborside D and E (Minor iridoid arbortristosides). The iridoid arbortristoside A has been reported

to have anti-proliferative activity. The decoction of leaves is widely used in ayurvedic medicine for treating arthritis. It has also been reported to possess hepatoprotective, antileishmanial, antiviral, antifungal, analgesic, antipyretic and ulcerogenic activities. The powdered seeds are recommended to treat scurvy. Roots are used for emaciation, and stem bark is taken to cure dysentery, ulcer of the palate and internal injuries, anti-inflammatory, antimalarial, leishmanicidal, amoebicidal, tranquilizing activity, anthelmintic activities.

The acetone soluble fraction of *Nyctanthes arbortristis* showed impressive antioxidant activity in several in vitro experiments such as hydroxyl and superoxide radicals and hydrogen peroxide scavenging assays. In addition, this property is reported due to the presence of high phenolics and flavonoids. Reactive oxygen free radicals are produced during immune activity; harmful effects of these reactive species include cellular damage to RNA, DNA, proteins. Antioxidants play an important role in neutralizing the normal level of oxidative damage caused by these free radicals.

The popular medicinal uses of *N. arbortristis* include anthelmintic and

antipyretic; besides, it is used in disorders like rheumatism and skin ailments and as a sedative. Phytochemical investigations of *N. arbortristis* indicated the presence of a large number of phenolic compounds, iridoids, and carotenoids, such as arbortristoside (A, B, C) with many biological activities like anticancer, antileishmanial, anti-inflammatory, antiallergic, immunomodulatory, and antiviral.

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Our main objective is to investigate *N. arbortristis* petals that can be used as an antioxidant effect by using DPPH.

PLANT PROFILE

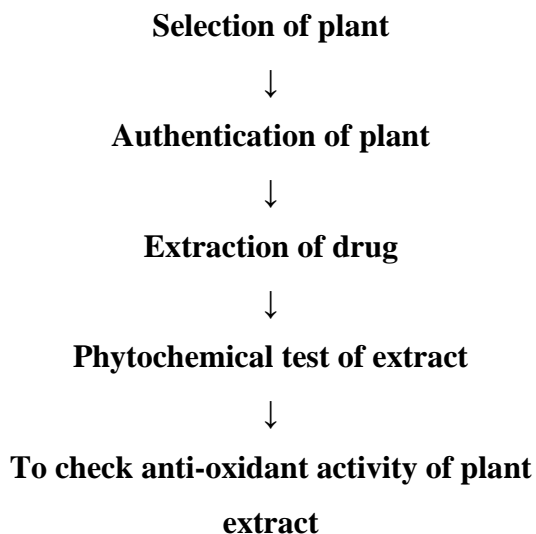
Biological Source: *Nyctanthes arbortristis*. (PARIJATAK)

Family: Oleaceae

Phyto-constituents: D- mannitol, tannic acid, methyl salicylate, amorphous glucosides, resin, ascorbic acid, carotene.

Uses: Antiviral, Antifungal, Analgesic, Antipyretic.

PLAN OF WORK



Flowchart 1



Figure 1: Nyctanthes Arbortristis flowers

EXPERIMENTAL WORK

Collection and Authentication of Plant:

These specimens *N. arbortristis* petals were collected in Bhigwan and identified in the Herbarium Department of Pharmacognosy, Dattakala College of Pharmacy, Bhigwan

Extraction

N. arbortristis petals were freshly obtained and dried in sunlight and crushed into a fine powder. The dry powdered petals (100 g) were percolated in 90 % ethanol by maceration with occasional shaking for two weeks and filtered.

Phytochemical Examination

To dry extract, add 5ml of 95% ethanol, few drops of concentrated Hydrochloric acid and 0.5 g of magnesium turning. The finally pink color was observed. (Shinoda test)

Evaluation of antioxidant activity

The DPPH is a stable radical with maximum absorption at 517 nm that can readily undergo scavenging by antioxidant. A lower IC₅₀ value indicates a higher antioxidant activity by using DPPH on *Nyctanthes Arbortristis* extract.

DPPH radical scavenging activity was done by using 1 ml of DPPH solution (0.1 mM in 95% ethanol (v/v) in different concentrations of extracts. The reaction mixture was incubated for 20 min at room temperature, and the absorbance was read at 517 nm. The scavenging effect was measured using the following equation:

$$\text{Scavenging effect (\%)} = [(A_{\text{control}} - A_{\text{sample}})/A_{\text{control}}] \times 100$$

DPPH free radical scavenging assay

Table 1: DPPH scavenging activity of extract of N. arbortristis

Concentration µg/ml	% Inhibition Extract	Concentration µg/ml	% Inhibition Ascorbic acid
25	36.26±2.465	25	46.91±0.68
50	45.27±1.255	50	50.19±0.01
100	51.28±0.275	100	54.63±0.07
150	55.97±2.555	150	62.22±0.96
200	77.59±0.475	200	78.16±0.27
250	91.63±0.012	250	92.56±0.21
IC ₅₀ Value	85	IC ₅₀ Value	63

RESULT

We observed that the scavenging effect of *N. arbortristis* increase as the concentration increases. The DPPH free radical scavenging potential of 250 µg/ml was found to be 91.63%. The 50% inhibitory effect of the extract was calculated from the curve, and it was 85 mg/ml.

DISCUSSION

The results obtained were showed the ability of the extract to show the antioxidant activity of *N. arbortristis* in DPPH radical assay.

CONCLUSION

Identification of natural product antioxidants has become a realistic and

powerful tool in the dietary and natural products industry.

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