



# PHYTOCHEMICAL SCREENING AND ANTIOXIDANT ACTIVITY OF EXTRACTS OF *TINOSPORA CORDIFOLIA* PLANT

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**Abstract:** Nowadays, modern medicine has made tremendous progress in synthetic drugs and antibiotics. But due to more side effects of modern synthetic drugs and antibiotics the whole world is attracted towards natural-based medicine. Man has done tremendous research on medicinal plants to treat various diseases. *Tinospora cordifolia* commonly known as *Giloy* or *Gudvel* is a medicinally important plant used to treat various diseases. In the present study, the phytochemical analysis and antioxidant activity by the DPPH assay method of *Tinospora cordifolia* plant extracts were undertaken and they show good to moderate antioxidant activity.

**Keywords:** Antioxidant activity, *Tinospora cordifolia*, plant extracts, DPPH.

## INTRODUCTION

Medicinal plants constitute an effective source of traditional (e.g., Ayurvedic, Chinese, Homoeopathy, and Unani) and, modern medicine. Antioxidants play an important role as a health-protecting factor. Scientific evidence suggests that antioxidants reduce the risk for certain chronic diseases such as cancer and heart disease. Today, approximately 70 % of 'synthetic' medicines are derived from plants. Popularity among the common people increases the usage of medicinal plants/herbal drugs due to their antioxidant activity. The reason for the popularity and acceptability is the belief that all-natural products are safe. The demand for plant-based medicines, health products, pharmaceuticals, food supplements, cosmetics, etc., is increasing in both developing and developed countries due to the growing recognition that natural products are nontoxic, have fewer side effects, and are easily available at affordable prices. Nowadays, there is a revival of interest in herbal-based medicine due to the increasing realization of the health hazards associated with the indiscriminate use of modern medicine, and the herbal drug industry is now a very fast-growing sector in the international market<sup>1-2</sup>.

Literature survey reveals that, *Giloy* is used as an immunity booster, used to treat chronic fever, helps to improve digestion, reduces stress and anxiety, and is a remedy for cough, asthma, bronchitis, and diabetes.

## MATERIALS AND METHOD

The plant materials of *Tinospora cordifolia* were collected seasonally and authenticated by the taxonomist Dr. S. P. Rothe from the Department of Botany, Shri Shivaji College Akola.

## CHEMICALS

All the chemicals used in the study were obtained commercially and of analytical grade.

## PHYTOCHEMICAL SCREENING<sup>3-5</sup>

The chemical tests were performed to test different chemical groups present in the water extract of the test plant.

**Table 1: Phytochemical analysis of *Test Plant Extract***

Sr. No.	Phyto-constituents	<i>C. bonduc</i>
1.	Carbohydrates	+
2.	Reducing Sugar	+
3.	Hexose sugar	
	i) Glucose	+
	ii) Fructose	+
4.	Steroid / Triterpenoid	+
5.	Protein	+
6.	Alkaloids	+
7.	Amino acids	+ (Ninhydrine)
8.	Flavonoids	+
9.	Tannins	+
10.	Coumarin Glycosides	+
11.	Anthraquinone Glycosides	—
12.	Cyanogenetic Glycosides	—
13.	Cardiac Glycosides	—
14.	Saponins	+

## MATERIALS AND METHODS

The plant material of *Tinospora cordifolia* was shade-dried at room temperature and ground in a manual mill to get a coarse powder. The coarse powdered materials of the test plant were kept in an airtight polythene bag and stored in a dry place. These powders were extracted with water by using the Soxhlet apparatus. The extracts were concentrated at 40 °C using a rotary evaporator. Finally, it was dried, crushed, and stored in air-tight bottles at 4 °C for further study.

## STUDY OF ANTIOXIDANT ACTIVITY BY DPPH

The antioxidant activity of the water extracts of the *Tinospora cordifolia* plant was assessed based on the radical scavenging effect of the stable 1, 1-diphenyl-2-picrylhydrazyl (DPPH). The diluted working solutions of the test plant extracts were prepared in water. 0.004% of DPPH was prepared in ethyl alcohol and 3 ml of this solution was mixed with 3 ml of sample solutions. These solution mixtures were kept in the dark for 30 min and optical density was measured at 517 nm using UV Visible spectrophotometer. Water (3 ml) with DPPH solution (0.004%, 3 ml) was used as blank. The optical density was recorded and % inhibition was calculated using the formula given below

$$\text{Percentage (\%) Inhibition of DPPH (\% AA)} = \frac{A - B}{A} \times 100$$

Where A=Optical density of the blank and B=Optical density of the sample.

## RESULTS AND DISCUSSION

The stock solution 1 mg/ml of water was prepared. The required dilutions of 0.1 mg/ml to 0.9 mg/ml were prepared by appropriate dilutions. The optical density and percent antioxidant activity were calculated (Table 1, Figure 1).

**Table 1: Optical density and percent antioxidant activity for *Test plant extract***

**O.D of blank DPPH=0.595**

Conc.mg/ml	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1
O.D. of <i>T. cordifolia</i>	0.556	0.548	0.538	0.487	0.433	0.410	0.380	0.346	0.338	0.310
%AA <i>T. cordifolia</i>	6.55	7.89	9.57	18.15	27.22	31.09	36.13	41.84	43.19	47.89

**Figure 1: Decrease in optical density of sample with increase in concentration for *T.cordifolia* plant extract.**

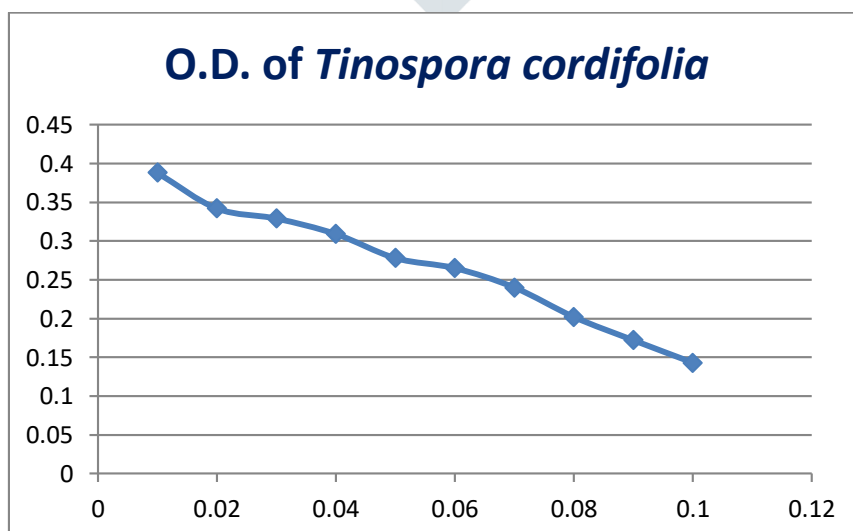
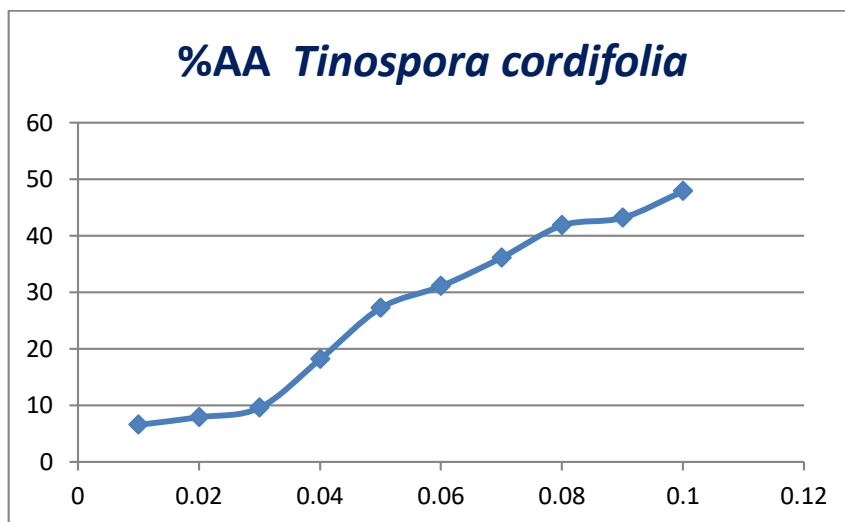


Figure 2: Increase in percent antioxidant activity with increase in concentration for *T.cordifolia* plant extract.

## CONCLUSION

From the above study, it is concluded that various phytochemicals were present in the *Tinospora cordifolia* plant extract. In the present study, we have found that, the remarkable decrease of O.D. value and increase in %AA with an increase in concentration of *Tinospora cordifolia* plant extract is observed which shows that they have good antioxidant activity.

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