# TO INVESTIGATE THE ANTIOXIDANT ACTIVITY OF HERB *Polygonatum cirrhifolium* USING *IN-VITRO* ANTIOXIDANT METHODS

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**ABSTRACT**

## Objective

To investigate the antioxidant activity of chloroform extract of dried *Polygonatum cirrhifolium* (*P. cirrhifolium*) rhizome.

## Methods

Antioxidant activity of the extract was tested by using DPPH (1,1-diphenyl-2-picryl-hydrazyl).

## Results

: *P. cirrhifolium* chloroform extracts scavenged DPPH thus having antioxidant activity.

**Keywords:** Reactive oxygen species, DPPH, Polygonatum cirrhifolium.

## INTRODUCTION

Oxidative stress and inflammation may lead to cancer and other neurodegenerative disease. These reactive species generated due to oxidative stress may cause damage to nucleic acid, protein and lipids. This will further leads to various diseases like atherosclerosis, aging and cancer. Antioxidants are the agents that have ability to scavenge ROS and protect us from the diseases that are produced because of oxidative stress 7. Polygonatum cirrhifolium is a perennial herb that belongs to family Liliaceae and distributed in temperate region of northern hemisphere in northern Himalaya from 1500 to 3300 m. P. cirrhifolium also called Mahaa- medaa. In folk language it is known as Devarigaanl. It is one of the Asthaverga plant. It is a herb of about 2 to 4 foot, having linear leaves having tendril like tips. Its flower is white greenish purple or pink on

short stocks and blue black berry like fruit. Its rhizomes are fleshy. The plant is capable of rejuvenating nerves thus it act as tonic for nervous system. The Ayurvedic Pharmacopoeia of India recommends the dried root in insomnia and for fear psychosis in children. The study was therefore conducted to evaluate the antioxidant activity of P. cirrhifolium.

## 2. Materials & Method

2.1. Chemicals All chemicals were analytical grade. The chemicals required for biochemical assay were obtained from Sigma Chemicals Co., USA. All the chemicals were used without any further purification. The chemicals are in good packing condition to avoid surrounding interruption because it may manipulate our readings.

2.2. Antioxidant assays

2.1.1 DPPH Free radical scavenging assay

The antioxidant activity of test compounds was calculated by using the free radical scavenging activity. Ascorbic acid was used as standard or positive control. 3 ml. of different concentration of test compound (1, 2, 4, 8, 16, 32µg/ml) was prepared and 0.1 ml of 0.1 mM solution of DPPH in ethanol was added to it. The mixture was shaken vigorously and allowed to stand at room temp for 30 min and absorbance was measured at 517 nm by using a Spectrophotometer (Shimadzu 1800 UV-visible spectrophotometer). Similar procedure was followed with ascorbic acid. Compare the result with Ascorbic acid as a Standard.

In a graph , the % inhibition was plotted against log concentration and IC50 (half-maximal inhibitory concentration) value was calculated by linear regression analysis

## 3. RESULTS AND DISCUSSION

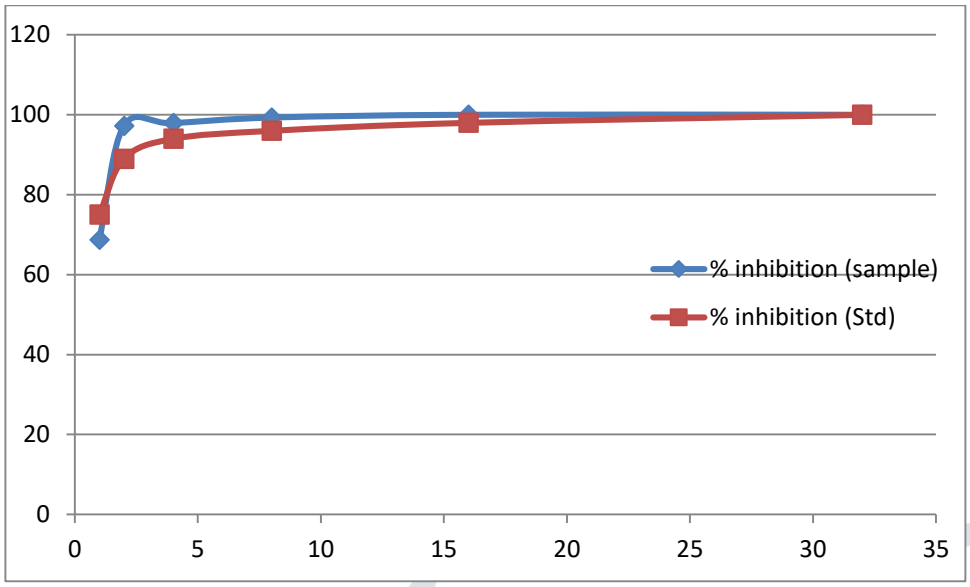
3.1 In DPPH Free radical scavenging assay, antioxidant efficiency is measured at ambient temperature and thus eliminates the risk of thermal degradation of the molecules tested. However, the reaction mechanism between the antioxidant and DPPH depends on the structural conformation of the antioxidant (Brand-Williams et al, 1995).

It was observed that the Constituents were capable of neutralizing the DPPH free radicals via hydrogen donating activity at concentrations of 1, 2, 4, 8, 16 and 32 µg/ml respectively.

As shown in Table 1 and Fig., DPPH scavenging activity increased in a concentration dependent manner as compared to ascorbic acid, as the positive antioxidant control in this protocol. IC50 values are reported in Table 2.

**Table No. 1: Percent Inhibition of Polygonatum cirrhifolium rhizome and Ascorbic Acid by DPPH Free radical Scavenging Assay**

| S.no | Compound | 1µg/ml | 2 µg/ml | 4µg/ml | 8µg/ml | 16µg/ml | 32µg/ml |
|---|---|---|---|---|---|---|---|
| 1 | Ascorbic Acid | 75 | 89 | 94 | 96 | 98 | 100 |
| 2 | Polygonatum cirrhifolium *( Rhizome)* | 68.75 | 97.2 | 97.9 | 99.3 | 100 | 100 |




**CONCENTRATION (µg/ml )**

## 4. Conclusion

The aim of the study is to determine the antioxidant activity of P. cirrhifolium rhizome and compare it with Ascorbic acid. We have observed that IC50 values of Polygonatum cirrhifolium rhizome and Ascorbic Acid by DPPH Free radical Scavenging Assay was found to be 3.9 µg/ml and 3.1 respectively.

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