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ANTIOXIDANT ACTIVITY OF ALKALOID EXTRACTS OF *TINOSPORA CORDIFOLIA* AND *CUSCUTA REFLEXA:* A COMPARATIVE STUDY

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In the present study the antioxidant activity of alkaloidal extracts of *Tinospora cordifolia* (Family-Menispermaceae) and *Cuscuta reflexa* (Family-Convolvulaceae) stem has been evaluated. The 50% DPPH radical scavenging activity for *T.cordifolia*, *C.reflexa* and Ascorbic acid (standard compound) was observed at 0.05, 0.18 and 0.042 mg/ml concentration, respectively. The activity of *T. cordifolia* was comparatively higher than *C.reflexa*, which is comparable with standard compound ascorbic acid.

Keywords : Alkaloid extract; Antioxidant activity; *Cuscuta reflexa; Tinospora cordifolia.*

Natural products, such as plant extract, either as pure compounds or as standardized extracts, provide unlimited opportunities for new drug discoveries. Among the various phytochemical, free radicals are known to be the major cause of various chronic and degenerative diseases. Oxidation is a natural process in organisms for the production of energy to fuel biological cycles. Conversely, the uninhibited production of oxygen-derived free radicals is involved in the onset of many diseases such as arthritis, atherosclerosis, rheumatoid and cancer as well as in many degenerative diseases related with aging.

Tinospora cordifolia has long been used in India as a medicine. It is said to be a tonic, and a diuretic. This plant has many traditional uses for the treatment of the skin and would make an excellent addition to skin care products. *T. cordifolia* is used in the Indian Ayurvedic system of medicine for the treatment of jaundice, diabetes, rheumatoid arthritis, and is also used as an immunostimulant. A climber found in tropical and subtropical India and parts of the Far East, and in primary rainforests .The whole plant contains, 2.22%; traces of an alkaloid[1].

The seeds of *Cuscuta chinensis* Lam. are a traditional Chinese medicine that is commonly used to nourish and improve the liver and kidney conditions in China and other Asian countries. As oxidative stress promotes the development of acetaminophen (APAP)-induced hepatotoxicity. The *in vitro* antioxidant activity of *Cuscuta reflexa* stem extract has been investigated. The ethyl acetate fraction of ethanol extract showed higher activity than the other fractions. The antioxidant activity of extracts are very close and identical in magnitude and comparable to that of standard antioxidant compounds used[2]. Antioxidant activity of alkaloid extracts of *Fumaria* sps. and *Azardirecta indica* have been reported earlier[3,4]. In the present investigation a comparative study of antioxidant activity of alkaloid extracts of *Tinospora cordifolia* (Family-Menispermaceae) and *Cuscuta reflexa* (Family-Convolvulaceae), stem was carried out which are not reported so far.

The plant material of *Cuscuta reflexa* was collected from Bharatpur (Rajasthan) in the month of July, where as the plant material of *Tinospora cordifolia* was collected from Mumbai in the month of September. Both of the plant materials were dried at 40^{0}C till a constant weight was achieved. The dried plant materials were extracted following the standard method[5].

The effect of extracts on DPPH (1, 1-Diphenyl-2-picrylhydrazyl) radical was estimated [6]. A solution of 0.135 mM DPPH in methanol was prepared and 1.0 ml of extract in methanol containing 0.02-0.1 mg of the extract. The reaction vortexed thoroughly and left in the dark at room temperature for 30 min the absorbance of the mixture was measured spectrophotometrically at 517 nm . Ascorbic acid was used as reference.

The percentage scavenging was calculated as according to the following equation -

% Scavenging =Ac- As÷Ac ×100

Ac: absorbance of DPPH radical with methanol

As: absorbance of sample

The Fig.1 shows the dose response curve of DPPH radical scavenging activity of alkaloidal extract of *C. reflexa* and *T. corfolia* stem. The 50%DPPH radical scavenging activity for *T.cordifolia*, *C.reflexa* and

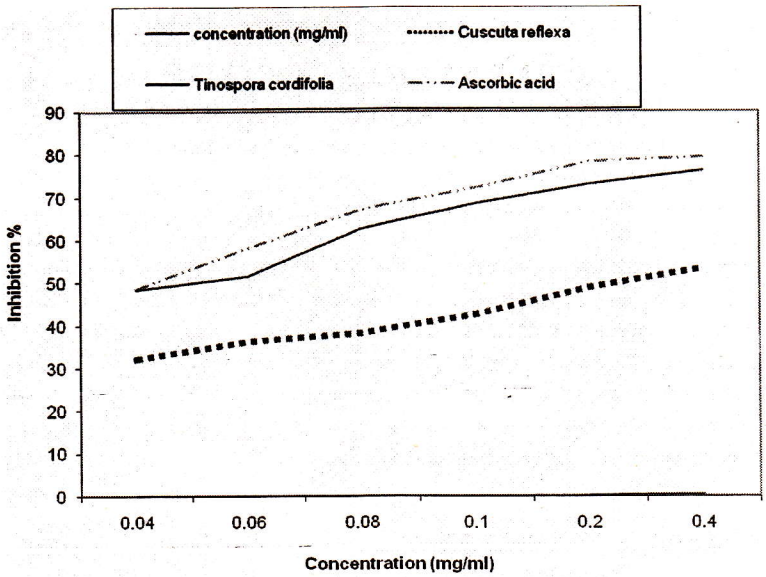

Fig.1. Showing the comparative antioxidant activity of alkaloidal extracts of *Cuscuta reflexa* , *Tinospora cordifolia* and Ascorbic acid.

Table 1. Showing the comparative stydy of antioxidant activity of alkaloidal extracts of *Cuscuta reflexa, Tinospora cordifolia* and Ascorbic acid.

Concentration (mg/ml)	0.04	0.06	0.08	0.1	0.2	0.4
Cuscuta reflexa	32.11	36.12	38.13	42.56	48.74	53.22
Tinospora cordifolia	48.33	51.54	62.61	68.54	72.98	76.10
Ascorbic acid	48.55	58.11	67.14	72.14	78.22	79.13

Ascorbic acid (standard compound) was observed at 0.05,0.18 and 0.042 mg/ml concentration, respectively (Table 1). The antioxidant activity of *T. cordifolia* was comparatively higher than *C.reflexa*, which is comparable with standard compound ascorbic acid.

T. cordifolia and *C. reflexa* are reported to have anti-cancerous alkaloids[7,8]. The anti-cancerous activity of both these plant may be due to their radical scavenging activity against DPPH radical observed in the present study, which support the previous findings. The alkaloidal extracts of both plants showed the radical scavenger power, so they can be used as natural and good source of natural antioxidant for medical and commercial need.

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