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ANTI-OXIDANT ACTIVITY OF TOONA CILIATA

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ABSTRACT

Toona ciliata also known as Toon and Red cedar, belonging to the family Meliaceae. . Toona ciliata leaves are the important source of some aromatic components like coumarin glycoside, tannins, flavonoids, phenolic compounds, triterpenoid, steroids.Plant leaves used traditionally from the ancient time as anti-ulcer activity, analgesic activity, antifungal activity, antimicrobial, activity, anti-tumor activity, anti-feeding activity, insect-repellent, insecticidal, antiviral, molluscicidal.
In the present study, an attempt was made to carryout the isolation of chemical constituents by column chromatography. The isolated compound was identified by TLC & characterized by IR, NMR & Mass spectroscopy Anti-oxidant activity of the extract and the isolated compounds was studied in vitro model DPPH and / or super oxide method.

Keywords: Toona ciliata, Anti oxidant, NMR, TLC, DPPH.

1. INTRODUCTION

All over the world at present there is a great activity as scientists investigate plants, micro-organisms, marine creatures and many other forms of life for biological activity. There is a desire to find out more about the interactions between one organisms and another which can be attributed to the chemical substances present in at least one of the species concerned. Natural product research is one of our most promising sources of medicine for the future.

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During the last few decades there has been an increasing interest in the study of medicinal plants and their traditional use in the different parts of the world. One of them which is having numerous traditional is *Toona ciliata* commonly known as Toon and Red cedar, belonging to the family Meliaceae. *Toona ciliata* leaves are the important source of some aromatic components like coumarin glycoside, tannins, flavonoids, phenolic compounds, triterpenoid, steroids.Plant leaves used traditionally from the ancient time as anti-ulcer activity, analgesic activity, antifungal activity, antimicrobial, activity, anti-tumor activity, anti-feeding activity, insect-repellent, insectisidal, antiviral, molluscicidal.
In the present study acetone, methanol, and aqueous extracts of *Toona ciliata* were evaluated for the antioxidant activity DPPH method using ascorbic acid as a standard drug.

2. Materials and methods:

Plant material: The leaf of *Toona ciliata* were collected and authenticated by Regional Research Institute (Ay.), Bangalore.

2.1 Extraction procedure:

Shade dried leaves were coarsely powdered and subjected to successive solvent extraction by a process of continuous extraction (soxhlation). The extraction was done with different solvents in their increasing order of polarity such as petroleum ether, benzene, chloroform, acetone, ethanol and water. Each time the marc was dried and later extracted with other solvents. All the extract were concentrated by distilling the solvent in a rotary vacuum evaporator and evaporated to dryness. The yield was found to be 4.7, 1.24, 0.36, 2.14, 5.30 and 38.82% w/w.

2.2 Extraction and isolation of phytoconstituents:

Successive extraction of powder (leaf) was carried out with different solvents like pet ether, benzene, chloroform, acetone, methanol, and water (non-polar to polar). The methanolic extract was selected for the column chromatography based on the phytochemical screening, TLC pattern and the yield of the extract. Total two compounds were isolated by column chromatography technique.

2.3 Evaluation of Antioxidant activity of extracts and isolated compound:

The methanolic and acetone extract have shown % inhibition value 89.64±18.125 and 91.24± 8.125 respectively, which are near to the % inhibition value 97.13±12.64 of standard (Ascorbic acid). Thus, methanolic and acetone extract have sown anti oxidant activity equivalent to the standard. The aqueous extract and isolated compound (Ans-2) have shown % inhibition value 70.673±13.855 and 77.338±17.337 respectively.

Table 1: - Anti oxidant activity of the extracts and the isolated compounds:

Sr. No.	Name of the extract	Concentration Used (µg/ml)	% Inhibition	IC50 value (µg/ml)
1.		500	97.35	
2.		250	96.23	
3.		125	95.19	
4.	Methanolic	62.5	92.40	
5.	extract	31.25	92.15	4.097
6.		15.6	93.16	
7.		7.8	79.49	
8.		3.9	47.59	
9.		1.95	23.54	

Table 2: - Antioxidant activities of different extracts were tested by the DPPH method.

Sr. No.	Name of the extract	Concentration Used (µg/ml)	% Inhibition	IC_{50} value (µg/ml)
1.		500	98.09	
2.		250	97.80	
3.		125	97.17	
4.		62.5	96.23	
5.	Acetone	31.25	94.19	4.508
6.	extract	15.6	93.35	
7.		7.8	81.41	
8.		3.9	43.25	
9.		1.95	28.45	

2.4 DPPH inhibition assay: Preparation of Test and Standard solutions

The extracts and the standards, ascorbic acid 21 mg were separately dissolved in 5 ml of freshly distilled DMSO. These solutions were serially diluted with freshly distilled DMSO to obtain the lower dilutions.

2.5 Procedure

The assay was carried out in a 96 well microtitre plate. To 200 µl of DPPH solution, 10 µl of various concentrations of the extract or the standard solution was added separately in wells of the microtitre plate. The plates were incubated at 37 °C for 30 min. Absorbance was measured at 517 nm using ELISA reader.

Table 3: - Anti oxidant activity of the extracts:

Sr. No.	Name of the extract	Concentration Used (µg/ml)	% Inhibition	IC_{50} value (µg/ml)
1.		500	77.26	
2.		250	76.18	
3.		125	75.23	
4.		62.5	74.11	
5.	Aqueous extract	31.25	70.29	4.645
6.		15.6	65.11	
7.		7.8	60.23	
8.		3.9	41.98	
9.		1.95	25.00	

Sr. No.	Name of extract	% Inhibition	IC_{50} value (µg/ml)
1.	Standard (Ascorbic acid)	97.13±12.64	2.69
2.	Methanolic extract	89.64±18.125	4.097
3.	Acetone extract	91.24± 8.125	4.508
4.	Aqueous extract	70.673±13.855	4.645

3. Result & Discussion

The present study deals with extraction, and isolation of chemical constituents from the crude extracts, and antioxidant activity of different extracts and isolated compounds of *Toona ciliate*.

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