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Phytochemical screening of the common weed *Chrozophora rottleri* to explore the antioxidant property

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ABSTRACT

Chrozophora is a common weed of the family Euphorbiaceae is selected for the study to investigate its antioxidant property basing on the preliminary phytochemical screening. The antioxidant activity was screened in vitro against Nitric oxide radical, hydroxyl radical and Superoxide radical and compared with standard antioxidant ascorbic acid. The reductive ability of *Chrozophora rottleri* were compared with standard antioxidant BHT. From the results it is evident that *Chrozophora rottleri* exhibited in vitro antioxidant IC₅₀ values at very high concentration when compared against standards. Hence the present study did not show any evidence of *in vitro* antioxidant activity against commonly encountered free radicals whereas the phytochemical screening showed the presence of Alkaloids, Flavonoids, Glycosides, Tannins Saponins, Triterpenoids, Terpenoids. Hence although it showed an insignificant anti oxidant property in the plant extract but in the phytochemical screening it had shown very important active ingredients which forms a base for drug discovery.

Keywords: *Chrozophora rottleri*, antioxidant, DPPH, IC₅₀

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INTRODUCTION

An antioxidant is a molecule capable of inhibiting the oxidation of other molecules. Oxidation reactions [9] can produce free radicals [1] which start chain reactions occurs in a cell resulting in damage or death to the cell. Although oxidation reactions are crucial for life, they can also be damaging .Hence, plants [3] and animals maintain complex systems of multiple types of antioxidants, such as glutathione, vitamin C [5], and vitamin E as well as enzymes such as catalase, superoxide dismutase and various peroxidases. Low levels of antioxidants or inhibition of the antioxidant enzymes cause oxidative stress and may damage or kill cells. As oxidative stress appears to be an important part of many human diseases, the use of antioxidants in pharmacology is intensively studied, particularly as treatments for stroke and neurodegenerative diseases. However, it is unknown whether oxidative stress is the cause or the consequence of disease [4]. Antioxidants are widely used as ingredients in dietary supplements and have been investigated for the prevention of diseases such as cancer, coronary heart disease and even altitude sickness. Since fruits and vegetables happen to be good sources of antioxidants, this suggested that antioxidants might prevent some types of diseases.

MATERIAL AND METHODS

Leaves of the plant (*Chrozophora rotleri*) were collected in polythene bags from in and around kaduvetti, Chennai. The leaves are air dried for two weeks .The identification of the plant is done with the help of a Taxonomist. Phytochemical analysis[8], the dried leaf material was grounded into fine powder (20g) and are subjected to the extraction of bioconstituents using ethanol in soxhlet apparatus for 12hours.Extracts was filtered through the Whatman filter paper No.1.The filtrate was allowed to dry at room temperature and the solvent extracts were obtained. Condensed extracts were weighed and stored in air-tight containers at 4° C till further investigation. For radical scavenging activity, 20 g of the ground leaf samples were separately soaked in 200 ml of ethanol and allowed to stand for about 72 h for extraction. After 72 h, it was centrifuged at 10000rpm for 10mins.This is carried out thrice and the extract obtained is evaporated to dryness. Phytochemical screening of the extracts was carried out according to the methods described by Tease and Evans for the detection of active components like saponins, tannins, alkaloids, Phlobatanins, glycosides etc.Regarding in vitro anti oxidant study the ethanol extract of *Chrozophora rotleri* [7] leaves were tested for their free radical scavenging properties using different *in vitro* techniques such as DPPH radical scavenging activity by Braca et al, Hydroxyl radical scavenging activity by Elizabeth and Rao, Superoxide radical scavenging activity by method of Robak et al [12], Nitric oxide radical scavenging activity by method of Sreejan et al [11] and Reductive ability by the method of Jayaprakash et al.

RESULTS

The results were quite interesting to note that plant extract showed the presence of Alkaloids Flavonoids ,Glycosides, Tannins,Saponins,Triterpenoids and Terpenoids whereas with

reference to free radical scavenging ,results are not quite compromising after the statistical analysis [Table No 1]

Table No 1 [IC₅₀ value of *Chrozophora rottleri* on various free radicals]

TESTS	IC ₅₀	STANDARD	IC ₅₀
DPPH	78.72 ± 0.49	Ascorbic acid	26.75
Hydroxyl	42.11 ±0.65	Ascorbic acid	18
Nitric oxide	98.77 ±:0.667	Ascorbic acid	36
Superoxide	84.26 ±:0.29	Ascorbic acid	17.3
Reducing ability	170.07 ±78.77	BHT	15.7

DISCUSSION

Reactive oxygen species cause extensive damage by to tissues by producing oxidative stress in the tissue. The inhibiting capacity of *Chrozophora rottleri* when it was evaluated it shows IC₅₀ value of *Chrozophora rottleri* against this free radicals were found to be much higher (p<0.001) than the standards used, indicating that they have less antioxidant activity. Based on the data we conclude that *Chrozophora rottleri* does not show significant antioxidant potential under invitro condition. The present study did not show any evidence of *invitro* antioxidant activity against commonly encountered free radicals in human pathology [4]. The individual phytoconstituents of *Chrozophora rottleri* may exhibit antioxidant capability in higher concentration than the mixture of phytoconstituents present in *Chrozophora rottleri*. The phytoconstituents screening will form a base for the drug discovery research [2,10].

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