Research Article

In Vitro Antioxidant Study of Extracts of *Tephrosia spinosa* (L.F) Pers.

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ABSTRACT

In the present investigation, an attempt has been made to investigate the invitro antioxidant potential of chloroform and methanol extract of *Tephrosia Spinosa* (L.f) pers. The Nitric oxide assay method has been performed at different doses (20–100µg). The results of the present study shows that the methanol extract of *Tephrosia Spinosa* possess antioxidant activity through ABTS radical scavenging activity. The preliminary phytochemical investigation indicates the presence of flavonoids and flavon glycosides. The results are found to be significant when compare with the standard ascorbic acid. Further studies are required to determine the mechanism and isolation of active constituents involved in the antioxidant activity.

Keywords: *Tephrosia Spinosa*, ABTS and antioxidant activity.

INTRODUCTION

Free radicals had been implicated in several human diseases e.g. atherosclerosis, arthritis, ischemia and reperfusion injury of many tissues, central nervous system injury, gastritis, ageing, inflammatory response syndrome, respiratory diseases and cancer¹⁻⁴. Many herbal plants contain antioxidant compounds and these compounds protect cells against the damaging effects of reactive oxygen species such as singlet oxygen, superoxide, hydroxyl radicals and peroxynitrile⁵⁻⁶.

*Tephrosia Spinosa* (L.f) pers belongs to the family fabaceae⁷ and it is a thorny shrub, known as mullukollinji commonly found in south India on dry barren lands on the coast and inland to the hills of Coimbatore, Madurai and Tirunelveli districts. The phytochemical studies revealed the presence of flavanoids⁹. It is used in traditional system of medicine for anti-rheumatic, antipyretic, indigestion, anti-diarrheal, anti-inflammatory, anthelminitic and to control excessive thirst¹⁰. No systematic studies on anti-oxidant activity have been reported on *Tephrosia Spinosa*. Hence an effort has been made to establish the antioxidant activity.

Experimental Material and methods

The aerial parts *Tephrosia Spinosa* was collected The aerial parts *Tephrosia spinosa* was collected from Madurai district in 2009 and authenticated by Dr. D. Stephen who is the taxonomist in American college, Madurai. A voucher Specimen(KMCP/RXA/CC-0280) was deposited in the department of Pharmacognosy, K.M. College of pharmacy, Uthangudi, Madurai for future reference. The air dried aerial parts of plant material was ground into coarse powder using cutter mill and then stored in an air tight container for further use.

Preparation of Extract

The coarse powdered plant material was defatted with hexane using cold maceration process and further subjected to extraction with chloroform followed by methanol successively by cold maceration for five days until complete extraction was effected. It was then concentrated under reduced pressure at 50°C and finally dried in desiccators. The chloroform and methanol extracts were used for antioxidant activity.
ABTS Assay
The scavenging activity of the test sample was tested using ABTS assay. The method was described by Re et al., 1999 with a slight modification. The ABTS radical solution was prepared by mixing 14mM ABTS stock solution with 4.9 mM ammonium per sulphate and incubating 16h in the dark at room temperature until the reaction was stable. The absorbance of the ABTS solution was equilibrated to 0.70±0.02 by diluting with ethanol at room temperature. To 1ml of the ABTS solution various concentration of the test sample (20-100µg/ml) was added. The absorbance was measured at 734nm after 6minutes. The percentage inhibition of absorbance was calculated and plotted as a function of the concentration of standard and sample to determine the antioxidant concentration. Ascorbic acid was used as a standard.

\[
\text{ABTS Scavenged (\%)} = \left( \frac{A_{\text{cont}} - A_{\text{test}}}{A_{\text{cont}}} \right) \times 100
\]

Where,
\( A_{\text{cont}} \) is the absorbance of the control reaction.

The antioxidant activity of extracts are expressed as IC\(_{50}\). The IC\(_{50}\) value is defined as the concentration(µg/mL) of extracts that inhibits the formation of ABTS radicals by 50% .The results antioxidant activity of extracts of using ABTS free radical scavenging method are shown in Fig.1 and Table No :1.

RESULTS AND DISCUSSION
The obtained results of absorbance and percent inhibition showed decrease in the concentration of ABTS radical due to the scavenging ability of extracts and ascorbic acid as a reference compound A.100µg/ml of CETS ,METS and ascorbic acid exhibits 51.89% and 91.26 % inhibition.

CONCLUSION
The chloroform and methanol extracts of tephrosia spinosa have antioxidant activity. further studies are required to isolate the possible phytochemical constituents which may be responsible for anti oxidant activity.

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| EC50 | 0.9491 | 8.061 | 2.172 |

Table 1: ABTS Radical Scavenging activity of extract of Tephrosia Spinosa
ABTS Radical Scavenging Activity

Fig. 1:

REFERENCES

4. Halliwell B and Gutteridge J. Free Radicals in Biology and Medicine, Japan Scientific Press, Tokyo,1989;23.30