International Journal of Phytopharmacy
Vol. 4 (2), pp.57-58, Mar-Apr 2014
ISSN: 2277-2928 (Online)
Journal DOI:10.7439/ijpp
©Scholar Science Journals
www.ssjournals.com

Research Article

Anti-oxidant activity of methanolic extract of *Ficus religiosa* linn *bark* by using DPPH ((1, 1-Diphenyl-2-Picrylhydrazyl)

Sapna Mistry* and Samir Shah

Sardar Patel College of Pharmacy, Bakrol, Gujarat, India

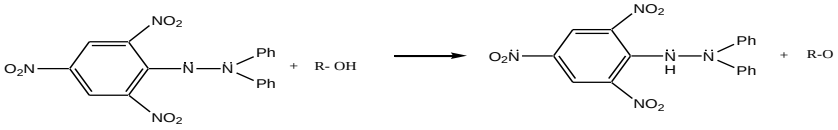
***Correspondence Info:**
Sapna Mistry
Sardar Patel College of Pharmacy, Bakrol, Gujarat, India
E-Mail: sapnanakrani@yahoo.co.in

Abstract

Ficus religiosa is also called as Peepal belongs to family Moraceae, is potentially distributed in India-sub Himalaya, Bihar, Orissa, and West Bengal. The tree is found wild or cultivated nearly thought India is considered to be one of the world's most invasive tree and has the potential to spread across central India and upper genetic plain. The medicinal values of plant lie in their component phytochemical such as sterols, terpenoid, coumarins, tannins, and other nutrients like as amino acid, proteins, which produce a definite physiological action on the human body. The present study is aimed an Antioxidant activity of methanolic extracts by using DPPH (1,1-diphenyl-2-picrylhydrazyl) DPPH assay is based on the measurement of the scavenging ability of antioxidant towards the stable DPPH radical. DPPH is a stable free radical at room temperature and accepts an electron or hydrogen radical to become a stable diamagnetic molecule. The reduction capability of the DPPH radical is determined by the decrease in its absorbance at 517 nm, induced by antioxidants. The absorption maximum of a stable DPPH radical in methanol was at 517 nm.
Keywords: DPPH, DMSO, antioxidant, scavenging, free radicals

1. Introduction

Free radicals are the species capable of independent existence, which contain one or more unpaired electrons, being alone in the orbital. These molecules, which contain (highly unstable) unpaired electron in there outer most shell (orbit) tend to saturate there outer orbit by capturing an electron from a possible source. These are highly unstable and show high reactivity these leads to damage of different molecules in turn leads to various disorders. Free radicals highly reactive oxygen fragments, which are created by normal chemical process in the cells. During the respiration of cells (process which generates energy), some oxygen molecules are converted in to "Free Radicals" When one of the electron in the molecule is lost. "These are the substances of synthetic or natural origin, which protects the bio-membrane against reactive oxygen species (ROS) mediated tissue damage". DPPH assay is based on the measurement of the scavenging ability of antioxidant towards the stable DPPH radical. The free radical DPPH is purple in color in methanol and is reduced to the corresponding hydrazine, which is yellow in color, when it reacts with hydrogen donor.



Purple color DPPH Yellow Stable phenoxy radical

2. Method

2.1 Preparation of test and standard solution

The antioxidant activity of plant extract was determined by different *in-vitro* method such as, the DPPH free radical scavenging assay method. The extract was dissolved in DMSO at the concentration of 2mg/ml. all the Assays were carried out in triplicate and average value was considered. The extract and standard, ascorbic acid (2mg each) were separately dissolved in 5ml of DMSO. The solutions were serially diluted with freshly distilled DMSO to obtain the lower dilutions.

2.2 DPPH Radical scavenging activity

The free radical scavenging activity of the extract was measured in terms of hydrogen donating or radical scavenging ability using the stable free radical DPPH. 0.1 mm solution of DPPH in methanol was prepared and 1.0 ml of this solution was added to 3.0 ml of extract solution in water at different concentrations (50-250µg/ml). It was incubated at 37 ^{o}C for 30 minutes and the absorbance was measured at 517 nm UV-Visible Spectrophotometer (Systronics UV-Visible Spectophotometer 117, INDIA).against the corresponding blank solution. The assay was performed in triplicate. Ascorbic acid was taken as standard. Percentage inhibition of DPPH free radical was calculated based on the control reading, which contain DPPH and distilled water using the equation:

$$\text{DPPH Scavenged (\%)} = \frac{(A_{cont} - A_{test})}{A_{cont}} \text{ X } 10$$

Where A_{cont} is the absorbance of the control reaction and A_{test} is the absorbance in the presence of the sample of the extract.

The antioxidant activity of the extract was expressed as IC50. The IC50 value was defined as the concentration (in µg/ml) of extract that inhibits the formation of DPPH radicals by 50%.

3. Result

Table 1: Data shows % of antioxidant activity of methanol extract

Standard			Sample		
Concentration	**Absorbance at 517nm**	**%of activity**	**Concentration**	**Absorbance at 517nm**	**% of activity**
2 µg/m	0.673	39.36	50µg/ml	0.870	21.62
4µg/ml	0.479	56.84	100µg/ml	0.672	39.45
6µg/ml	0.282	74.59	150µg/ml	0.478	56.93
8µg/ml	0.159	85.67	200µg/ml	0.355	68.01
10µg/ml	0.074	93.33	250µg/ml	0.270	75.67

3.1 DPPH radical scavenging activity or Anti oxidant activity

DPPH is a stable free radical at room temperature and accepts an electron or hydrogen radical to become a stable diamagnetic molecule. The reduction capability of the DPPH radical is determined by the decrease in its absorbance at 517 nm, induced by antioxidants. The absorption maximum of a stable DPPH radical in methanol was at 517 nm. The decrease in absorbance of DPPH radical caused by antioxidants, because of the reaction between antioxidant molecules and radical, progresses, which results in the scavenging of the radical by hydrogen donation. It is visually noticeable as a change in color from purple to yellow. Hence, DPPH is usually used as a substrate to evaluate the antioxidative activity.

4. Conclusion

Anti-oxidant screening of methanol extract showed moderate activity against DPPH (1,1-diphenyl-2-picrylhydrazyl) assay method.

Acknowledgement

The authors are thankful to Sardar Patel College of pharmacy for providing the facilities to do the research work.

References

1. Farooqui A.A., Sreeramu B. S. Cultivation and collection of medicinal and aromatic crops.
2. The Ayurvedic Pharmacopoeia of India part-I, Vol.1by controller of publication civillines, New Delhi; 2001.
3. Lee SH. Antioxidative activity of browning reaction products isolated from storage-aged orange juice. *J. Agric. Food Chem* 1992; 40: 550-552.
4. Blois MS. Antioxidant determination by the use of a stable free radical. Nature 1958; 181:1199-1200.
5. Lai LS, Chous ST & Chao WW. Studies on the antioxidant activities of hsian-tsao (*Mesona procumbens* Hemsl) leaf gum. *J. Agric. Food Che* 2001; 49: 963-968.
6. Soares JR, Dins TCP, Cunha AP, Ameida LM. Antioxidant activity of some extracts of Thymus zygis. *Free Rad. Res* 1997; 26:469-478.
7. Chang LW, Yen WJ, Huang SC, Duh P.D. Antioxidant activity of sesame coat. *Food Chem* 2002; 78: 347-354.
8. Rastogi RP, Mehrotra BN. Compendium of Indian Medicinal Plant. 1983. Vol–3 New Delhi: National Institute of Science Communication.
9. Anonymous. Treatise of India Medicinal Plants; National Institute of Science Communication: New Delhi 1997, 277.