

In Vitro Antioxidant Activities Of Two Medicinal Plants on the Basis of DPPH Free Radical Scavenging Activity

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ABSTRACT

The 2,2-diphenyl-1-picrylhydrazyl (DPPH) Free radicals are atoms or molecules that have one or more unpaired electrons on its outer orbital, highly reactive, and could damage cell inside human body. A Human Healthy body produce antioxidant to neutralize free radicals, but human ageing and stress oxidative conditions would increase the formation of free radicals. In The present research was used *o.sanctum* leaf , *T.chebula* plant powder Hydro alcoholic extract and with ascorbic acid in standard form; inhibition caused by The IC₅₀ value of *ocimum sanctum* leafy have 47.235 and *Terminalia chebula* have 63.18 compared to ascorbic acid having 22.03. The objectives of this research were to determine antioxidant activities of aerial part of using DPPH method, These findings support the ethnomedical use of this plant to promote good health.

Key words: Antioxidant; ascorbic acid; radical scavenging assay; *ocimum sanctum* plant ; *Terminalia chebula*; Hydro alcoholic extract.

1. Introduction

The uses of medicinal plants in traditional medicine has been described in literature dating back several 1000 years (Change et al., 2016). In most developing countries, the utilization of medicinal plants represents an affordable and most convenient therapeutic strategy against various ailments. Traditional medicine has an important role in healthcare as that of other developing countries (Musa et al., 2011). India is the largest producer of medicinal herbs and is appropriately called the botanical garden of world (Shariff N, Sudarshana MS, Umesha S, Hariprasad P, 2006). One of the main achievements in modern health conscious lifestyle is the growing interest as regards of medicine, dietary supplements and food additives of natural origin, such as herbal extracts, which contain high amount of many types phytochemicals, antioxidants or vitamins, depending on the source of herbal plant organs (Van der Goot et al., 2016). Antioxidants important role play of help maintaining the ideal balance of radicals in body cells, preventing oxidative stress related illnesses (Lin and Beal, 2006). Few vitamins can also assist this goal, while serving other purposes in the body (sight, bone growth, metabolism, blood coagulation, biosynthesis of molecules, etc.). The lack or surplus of antioxidants and vitamins may equally cause health problems that ought to be avoided, but herbal extracts are common tools to supply the recommended doses of these vital compounds. The **radical** neutralizing property of several plants was reported by previous studies.

The 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay is commonly applied for appraising antioxidant activity of plant extracts. To test the potential interference of borate on DPPH assay, the effects of borates on the DPPH radical scavenging ability of ascorbic acid (R)-3,4-dihydroxy-5(S)-1,2-dihydroxyl-furan-2(5H)-one. The presence of borate led to a remarkable reduction of DPPH inhibition of DPPH radical scavenging ability can be suppressed contingently on borate content. In this present study we have measured antioxidant activity of hydro alcoholic extracts like *ocimum sanctum* leafy and *Terminalia chebula* employing scavenging activity of DPPH. Tulsi also known as family of the *ocimum sanctum* is laminaceae. *ocimum sanctum* are produced in all over India and Southeast Asia,.. There are many chemical constituent present in *ocimum sanctum* such as, oleanolic acid, rosmarinic acid, ursolic acid eugenol, , linalool, carvacrol, β elemene, β caryophyllene, germacrene. *ocimum sanctum* is considered to have diuretic, stimulant property (Falagas ME, Bliziotis IA 2007).

The fruit of *Terminalia chebula* Retizus (Combretaceae) commonly known in India as Harad (Sanskrit: Haritaki) is found throughout India and Southeast Asia. This plant has been reported to an exhibit variety of biological activity including anticancer, antioxidant, antidiabetic, antibacterial, antiviral, purgative, and astringent and blood purifier. In *T. chebula*, 33% of the total phytoconstituents are hydrolysable tannins (which may vary from 20-50%) and are responsible for different pharmacological activities (Saleem A et al., 2002, Cheng HY et al., 2003, Hamada S., 1997, Naik GH et al., 2004, Jagtap AG and Karkera SG. 1999, Sato Y et al., 1997). Herbs have been provided many therapeutic potential to the health of individual. The demand of plant are increasing day by day for medicinal purpose (Gupta SK, Prakash J, Srivastava S, 2002)

2. Used Plant Scientific classification

ocimum sanctum Table nu 1

Terminalia chebula Table nu 2

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Clade	Asterids
Order	Lamiales
Genus	Ocimum L.
Species	O.tenuiflorum
Family	Lamiaceae

Table number-1

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Clade	Rosids
Order	Myrtales
Genus	Terminalia
Species	T.chebula
Family	Combretaceae

Table number-2

3. MATERIALS AND METHODS

3.1 Plant materials

Plant Material- The *ocimum sanctum* plant Leaves were collected nursery and second *Terminalia chebula* fruits collected in market. Both plant collected time was February 2020 from Bhopal, M.P., India. The botanical identification of the collected both plant was done by Dr Suman Mishra; Vindhya Herbal Bhopal.

3.2 PREPARATION OF PLANT EXTRACT: 40 gm of Both plant powder form in Soxhlet extraction. With hydro alcoholic solvent (D/W and methanol). Extraction was done at 65°C for 72 hours. And extracts were then evaporated at 40°C to form a paste, and further transferred into sterile and stored in refrigerated until ready for use.

3.3 Chemicals For DPPH

1-0.1 Mm solution of DPPH in methanol was prepared and used in the study.

2-Ascorbic acid 1%.

3.4- 2,2-Diphenyl-1-picryl-hydrazyl (DPPH) assay

Antioxidant activity was done by Molyneux method (Molyneux P et al., 2004) Methanol was used as blank, DPPH 50 µg/mL as control and ascorbic acid as standard. 2 ml of standard or sample was prepared in various concentration then added into 2 ml DPPH 50 µg/ml solution and incubated for 30 minutes before measured by

UV-visible spectrophotometry at λ 517 nm and performed triplicate. IC₅₀ of sample or standard was calculated by DPPH scavenging activity calibration curve (Brand-Williams W et al.,1995)

The scavenging potency of 2,2-diphenyl-1-picryl-hydrazyl (DPPH) radical of pomegranate and Citrus (Lemon) peel Hydro alcoholic was determined . The ability to scavenge DPPH radicals was calculated using the following equation.

$$\text{DPPH Scavenged (\%)} = \frac{A_{\text{control}} - A_{\text{test}}}{A_{\text{control}}} \times 100$$

Where, **A control** is the absorbance of the control reaction and **A test** is the absorbance in the presence of the sample of the extracts. The antioxidant activity of the *ocimum sanctum* leaf and *Terminalia chebula* fruits extract is expressed comparing with standard ascorbic acid.

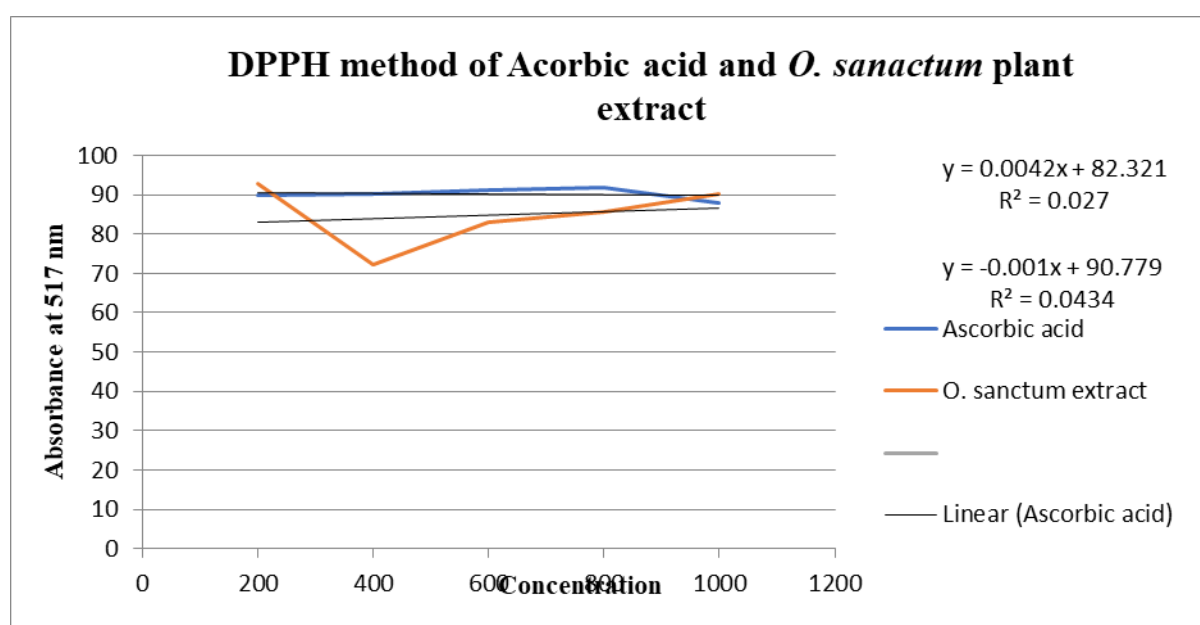
4 Results and discussion

DPPH is stable nitrogen centered free radical that can accept an electron or hydrogen radical to become a stable diamagnetic molecule. DPPH radicals react with suitable reducing agents, then losing colour stoichiometrically with the number of electrons consumed, which is measured spectrophotometrically at 517 nm. Radical scavenging activity using DPPH radical are shown in and expressed, radical $\mu\text{g/ml}$ extract. The Hydro alcoholic extract of *ocimum sanctum* leaf and *Terminalia chebula* fruit studied showed maximum radical scavenging property. Maximum DPPH radical scavenging ability IC₅₀ values was observed Ascorbic Acid 22.03, *ocimum sanctum* leaf (47.235) and *Terminalia chebula* fruit (63.18).

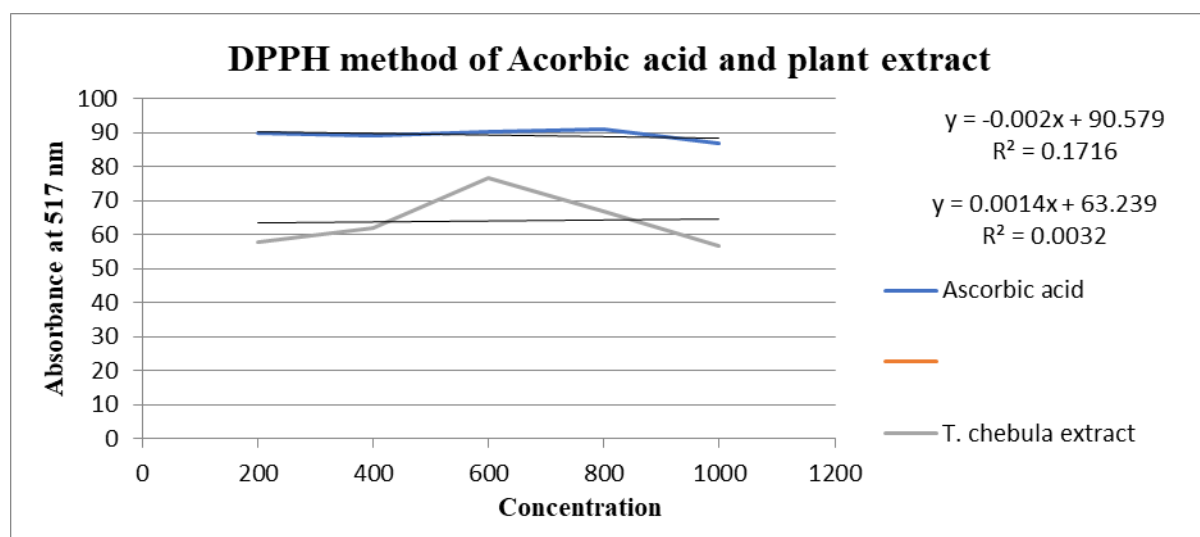
Results as show in Table nu.1, Graph nu 1,2 and table nu.3.

Concentration ($\mu\text{g/ml}$)	Ascorbic Acid	O.sanctum extract	T.chebula extract
200	89.1 %	92.9 %	58 %
400	90.09 %	72.18 %	62 %
600	91.18 %	83.09 %	76.54 %
800	91.9 %	85.63 %	67.09 %
1000	87.9 %	90.36 %	56.9 %

Table Number-1 Percent DPPH scavenging of Ascorbic acid and Plant extracts in various concentrations



Graph nu.2-DPPH Scavenging activity of ocimum sanctum leaf extract.



Graph nu.3-DPPH Scavenging activity of *Terminalia chebula* fruit extract.

Sample	IC 50 Value
Ascorbic Acid	22.03
<i>O. sanctum</i>	47.235
T. chebula	63.18

Table nu.2 - IC₅₀ Values of Ascorbic Acid and Both plants

5 Conclusion

Antioxidants are micronutrients that have gained importance in recent years due to their ability to neutralize free radicals or their actions. The present study was conducted in , the *ocimum sanctum* leaf and *Terminalia chebula* fruit plant extract demonstrated scavenging of stable 2,2- diphenyl-2-picrylhydrazyl (DPPH) radical. Among these plants maximum antioxidant activity was shown by *Terminalia chebula* fruit (63.18) and *ocimum sanctum* leaf (47.235). There are no previous many reports data available for the antioxidant activity of *Terminalia chebula* fruit. It is best antioxidant agent having similar antioxidant activity to that of the standard ascorbic acid. The plant extracts from number of medicinal plants which are known to have biologically active principles are used in ayurvedic preparations and these extracts are prepared in bulk for Medicinal and commercial purpose.

Conflict of interest

The authors have no conflict of interest to declare.

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