

EVALUATION OF ANTICHOLESTEROL AND ANTIOXIDANT POTENTIAL OF CRUDE METHANOLIC SEED EXTRACT OF OCIMUM SANCTUM

¹Ranjeth Rajan.K.,²Gayathri .R.,³V.Vishnu Priya

ABSTRACT--Ocimum sanctum, popularly known as the holy basil, is arguably one of the most important plants in India. The leaves of the plant have been traditionally used for cough, colds, asthma. The increasing prevalence of multidrug resistant strains of bacteria and the recent appearance of strains with reduced susceptibility to antibiotics raises the specter of untreatable bacterial infections and adds urgency to the search for new infection-fighting strategies. Methanolic seed extract was prepared and its anti cholesterol and anti oxidant activity was analysed. From the result it is evident that Ocimum sanctum methanolic seed extract possesses antioxidants and anti cholesterol activity. Since the seed of Ocimum sanctum are edible, proper awareness of this herb can holistically reduce cholesterol and shield body from free radicals.

KEYWORDS— evaluation of anticholesterol and antioxidant potential of crude methanolic seed extract of ocimum sanctum

I. INTRODUCTION

Ocimum sanctum, popularly known as the holy basil, is arguably one of the most important plants in India. The leaves of the plant have been traditionally used for cough, colds, asthma. The increasing prevalence of multidrug resistant strains of bacteria and the recent appearance of strains with reduced susceptibility to antibiotics raises the specter of untreatable bacterial infections and adds urgency to the search for new infection-fighting strategies. From ancient times till today, these plants are being investigated for their phytochemistry and medicinal potency.

Medicinal plants have considerable importance as source of medicines in both rural and urban lives. Traditional medical practitioners use these plants in their day to day practice(1). Many chemicals are encountered by human

¹ Graduate Student, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai

² Assistant Professor, Department of Biochemistry, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, 160, Poonamallee High Road, Chennai 600077, Tamil Nadu, India, gayathri.jaisai@gmail.com, Telephone No: 9710680545

³ Professor, Department of Biochemistry, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Saveetha Institute of Medical and Technical Sciences, Saveetha University

either accidentally because they are in the atmosphere or by contact during occupational and recreational activities or by ingestion of food additives. It is conceivable that some chemicals may be inadvertently released into the environment and therefore be injurious to human health(2,3).

Plant extracts are used for treating various ailments as they possess anti-inflammatory, anti-bacterial, anti-fungal and antiviral effects. Phytomedicine which is nothing but use of medicinal herbs for treatment has been used for oral diseases like dental caries, periodontal diseases has ancient history. Medicinal records from India, Egypt, Greece and China has mentioned the usage of herbs like Tulsi, Neem, Curcumin, Triphala etc for treatment of oral diseases.(4) Thai holy basil has higher antioxidant capability than sweet basil and could be used as an effective bioactive ingredient to provide health-promoting function in food. (5)Eight phenolics rosmarinic, caftaric, caffeic, chicoric, *p*-hydroxybenzoic, *p*-coumaric, protocatechuic acid and rutin were identified in Thai holy/sweet basil leaves or seeds. (6)Among the natural constituents that have revealed anticeptive and anti-inflammatory activities are reported compounds belonging to the fixed oils and lignans . For example, linolenic acids from *Ocimum sanctum* possess anti-inflammatory activity against PGE₂, leukotriene and arachidonic blocking both the cyclooxygenase and lipoxygenase pathways(7,8,9).The use of plants, natural products are thought to be beneficial in protecting against radiation-induced damage, they are less toxic compared to synthetic compounds used at their optimum protective dose

The aim of the study is to analyse the methanolic seed extract of *ocimum sanctum* for anticholesterol and antioxidants activity.*Ocimum sanctum* (Tulsi) is a herb, widely used as a traditional medicine in South Asia. Eugenol is found to be its most active phyto-chemical constituent. *Ocimum sanctum* has been demonstrated to possess various therapeutic properties including it's anti bacterial, anti fungal, anti arthritic, anti coagulant, anti cancer, cardioprotective, anti ulcer, anti stress² anti diabetic activities.(10,11,12) *Ocimum sanctum* leaf being an herb for all reasons, is multifunctional and a highly used herb for curing many ailments.

II. MATERIALS AND METHOD

1, Ocimum sanctum seeds :

Ocimum sanctum seeds were purchased from organic herbal cure centre .Fresh *Ocimum sanctum* was used for analysis.

2, Methonolic seed extract preparation:

Ocimum sanctum seeds are weighed .The weighed *Ocimum sanctum* seeds are crushed using motor and pestle .

Methanol is added during the crushing of *Ocimum sanctum*

With this method methanolic seed extract is prepared .

III. ANTIOXIDANTS ACTIVITY

DPPH free radical scavenging activity

Scavenging of 2, 2-Diphenyl-1-picrylhydrazyl (DPPH) radical was assessed by the method of Hatano et al, (1989). DPPH solution (1.0 ml) was added to 1.0 ml of extract at different concentrations (0.1 to 0.5 mg/ml). The mixture was kept at room temperature for 50 minutes and the activity was measured at 517nm. Ascorbic acid at the same concentrations was used as standard. The capability to scavenge the DPPH radical was calculated and expressed in percentage (%) using following formula:

$$\text{DPPH radical scavenged (\%)} = \frac{\text{Control OD} - \text{Sample OD}}{\text{Control OD}} \times 100$$

Nitric oxide radical scavenging activity

Scavenging of nitric oxide radical was assayed by the method of Garrat et al. (1964). In the total volume of 3ml reaction mixture, 2ml of sodium nitroprusside, 500µl of phosphate buffered saline (PBS) were mixed with 500µl of different concentrations (0.1 to 0.5 mg/ml) of extract and incubated for 1 hour 30 minutes at 25°C. Then, 500µl of reaction mixture containing nitrite was mixed with 1 ml of sulfanilic acid and allowed to stand for 5 minutes for completing diazotization. Then, 1 ml of naphthyl ethylene diamine dihydrochloride was added, mixed and allowed to stand for 30 minutes at 25°C. A pink colored chromophore is formed in diffused light. Ascorbic acid at the same concentrations was used as standard. The activity was measured at 550 nm and the results were expressed in percentage (%) using following formula:

$$\text{NO radical scavenged (\%)} = \frac{\text{Control OD} - \text{Sample OD}}{\text{Control OD}} \times 100$$

In vitro anti-cholesterol activity

The anti-cholesterol assay was carried out as described as per the kit method (Spinreact, S.A.U-Ctra Santa Coloma, Girona, Spain). Cholesterol was dissolved in chloroform at a concentration of 2.5 mg mL/ml. Ten microliter of the extract was pipetted into micro titre plate followed by the addition of 2000 µL of R1 reagent and 10 µL of cholesterol as sample. Twenty microliter of distilled water and 2000 µL of R1 reagent were used as blank. Negative control comprised of 20 µL cholesterol and 2ml R1; standard comprised of 20 µL simvastatin and 2000 mL R1 reagent. The contents were incubated between 0-30 min at room temperature and the absorbance was read at 500 nm in a UV-Vis spectrophotometer against reagent blank. Anti-cholesterol assay of the extract was calculated using the following equation:

$$\text{Inhibition (\%)} = \frac{\text{Negative control} - \text{Sample}}{\text{Negative control}} \times 100$$

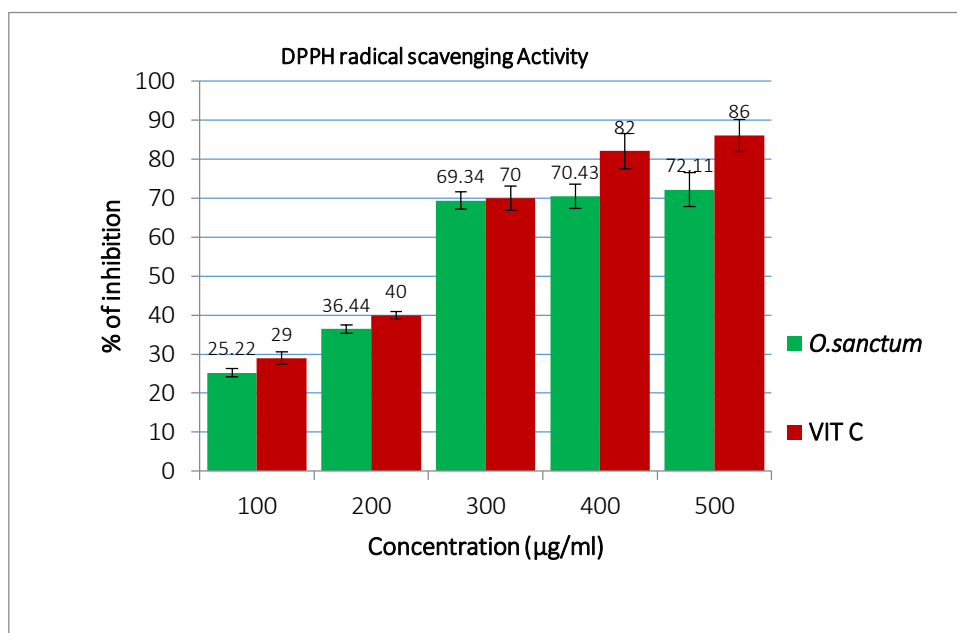
IV. STATISTICAL ANALYSIS

The data were be subjected to statistical analysis using one-way analysis of variance (ANOVA) and Duncan's multiple range test to assess the significance of individual variations between the groups. In Duncan's test, significance was considered at the level of $p < 0.05$.

V. RESULTS

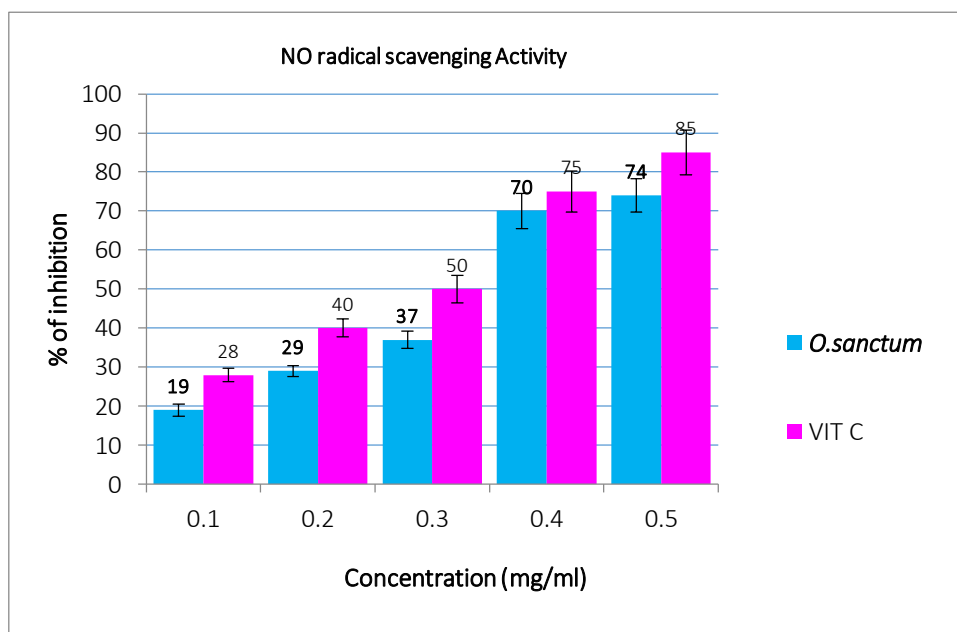
In vitro antioxidant and anticholesterol potential of G.sylvestre

Fig.1 DPPH radical scavenging activity



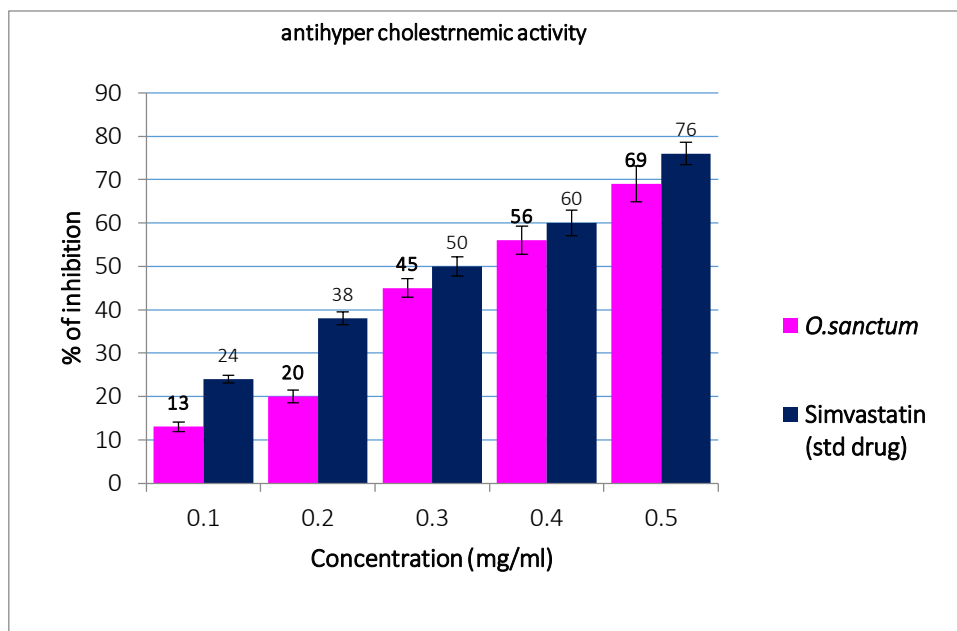
Each bar represents mean \pm SEM of 3 independent observations. Significance at $p < 0.05$

Fig.2. Nitric oxide radical scavenging activity



Each Bar Represents Mean SEM of 3 independent observations. Significance at $p.0.05$.

Fig. 3 In vitro antihyper cholestrnemic activity



Each Bar Represents Mean SEM of 3 independent observations. Significance at $p<0.05$.

VI. DISCUSSION

Antioxidants are man-made or natural substances that may prevent or delay some types of cell damage. They play an important role in inhibition and radical scavenging, thus providing protection against diseases. A great number of medicinal plants contain chemical compounds which possess antioxidant activities. Natural antioxidants are mainly phenolic compounds that may exist in all parts of the plants.

From the result it is evident that *Ocimum sanctum* methanolic seed extract posses antioxidants and anti cholesterol activity .Plants are used as medicines since the beginning of mankind. In this modern era of research and development, herbal medicine is not kept unnoticed and plants are still used either as medicine or medicinal substitutes. *O. sanctum* has gained extra importance in the field of ayurvedic (herbal) medicine because of its vast pharmacological activities which are increasing day by day with research.*Ocimum sanctum* leaf being an herb for all reasons, is multifunctional and a highly used herb for curing many ailments.

VII. CONCLUSION

Since the seed of *Ocimum sanctum* is edible,proper awareness of this herb can regulate holistically reduces cholesterol and shield body from free radicle.Juice of leaves is used as stimulant, stomachic, diaphoretic,

antiperiodic, used in gastric disorders and hepatic infections. It is also used in earache, catarrh, bronchitis and bronchial asthma.

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