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Evaluation of *Terminalia Paniculata* for Phytochemical and *In vitro* Antioxidant Activity

Vikas Kumar Verma, Amrita Bhajji, Praveen Kumar, Nishi Prakash Jain

RKDF College of Pharmacy, Bhopal, M.P.
Sarvepalli Radhakrishnan University Bhopal, M.P.

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Corresponding author: Vikas Kumar Verma (vikaskr.verma27@gmail.com)

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Abstract:

The traditional therapeutic use of the plants that were chosen for this inquiry are linked to the antioxidant properties of those plants. Flavonoids, terpenoids, and phenolic compounds are known to provide some level of protection because of their antioxidant properties. These plants are known to provide some measure of protection. . Current work have employed *in vitro* methods to investigate the antioxidant activities of extracts from the leaves of *Terminalia Paniculata*.

KEYWORDS: Extract, Antioxidant, Radicals.

INTRODUCTION

As the time changes with the advancement and with new diseases, man has been searching for cures for various diseases since ancient times. The production of pharmacopoeial, non-pharmacopoeial, and synthetic medications all benefit from the usage of components derived from medicinal plants. In addition, these plants have been crucial to the growth of human cultures all throughout the world [1]. Medicinal plants have been used in India for 5000 years under the Ayurvedic medicine. For disease prevention and recovery, this method involves diet and herbal therapies adapted in terms of the body, conscience, and soul [2]. In today's world, more than half of the medicines are made from natural ingredients [3]. Herbal drugs are also commonly used in both developed and under developed countries for healthcare. As per World Health

Organization (WHO) study, herbal drugs are mixtures of chemical compounds synthesized in plants, but their efficacy is reduced due to poor oral absorption [4]. Herbal remedies are natural ingredients that have been shown to be effective, both when used to cure diseases and when used as nutritional supplements to protect the human body from disease. Medicinal products are also marketed as pills, capsules, paste, tea extracts, and fresh or dried herbs, depending on demand. Free radicals are molecular species containing unpaired an electron capable of independent existence. The presence of the unpaired electron in the atomic orbital of free radicals makes them highly unstable and reactive, which facilitates them to donate or accept electrons and act as either oxidant or reductant. The traditional therapeutic use of the plants that were

chosen for this inquiry are linked to the antioxidant properties of those plants. Flavonoids, terpenoids, and phenolic compounds are known to provide some level of protection because of their antioxidant properties. These plants are known to provide some measure of protection. To overcome these troubles and for effective, targeted delivery of antioxidants, its gradual and sustained release, nanoformulations of natural antioxidants are the key players in the enhancement of effectiveness and their release at the specific targeted site in the treatment of several diseases. Current work have employed *in vitro* methods to investigate the antioxidant activities of extracts from the leaves of *Terminalia Paniculata*.

EXPERIMENTAL WORK

Collection of plant material

The plant leaves of *Terminalia Paniculata* were collected from available graphical sources. The plant drugs were identified, collected and stored for further use.

Preparation of plant material

The collected *Terminalia Paniculata* plant was washed with tap water. The plant leaves were crushed into small pieces and air-dried thoroughly under shade (at room temperature) for 1 month to avoid direct loss of phytoconstituents from sunlight. The shade dried materials were powdered using the pulverizer and sieved up to 80 meshes. It was then homogenized to fine powder and stored in air-tight container for further analysis.

Preparation of plant extracts

Collected moderately coarse plant powder of *Terminalia Paniculata* was used for the

preparation of various extracts. The plant leaves powder of the *Terminalia Paniculata* was extracted with petroleum ether, methanol and water using as solvent respectively by continuous hot extraction. The residue was evaporated by filtration through Whatmann No. 1 filter paper and the aqueous extract was concentrated used on a Rotary evaporator to get solid yield extract.

Evaluation of antioxidant activity of plant extracts [5]

- 150µl DPPH solution was added to 3 ml methanol and absorbance was taken immediately at 516 nm for control reading.
- Different volume levels of test sample (100, 120, 140, 160, 180 and 200 µl) were screened and made 200 µl of each dose level by dilution with methanol.
- Diluted with methanol with up to 3 ml.
- 150µl DPPH solution was added to each test tube.
- Absorbance was taken at 516 nm in UV-visible spectrophotometer (Shimadzu, UV-1700, Japan) after 15 min using methanol as a blank.

RESULTS AND DISCUSSION

The various extract produced significant DPPH radical scavenging activity from 10µg/ml. Antioxidant activity of *Terminalia Paniculata* was found to be increase with increasing concentration of pet- ether and methanol extracts. DPPH antioxidant assay is based on the ability of DPPH, a stable free radical to decolorize in the presence of antioxidant. The antioxidant activity of *Terminalia Paniculata* was compared with standard (ascorbic acid). The obtained result indicated that methanol extract has better antioxidant activity than pet-ether extract. The IC₅₀ of pet-ether extract is 18µg/ml and ethanol extract is 20µg/ml.

Table 1: Evaluation of Antioxidant activity of *Terminalia Paniculata*

Concentration($\mu\text{g/ml}$) and % inhibition						
Groups	10	20	30	40	50	IC ₅₀ ($\mu\text{g/ml}$)
Ascorbic acid	41.50 \pm 0.21	61.91 \pm 0.32	80.2 \pm 0.31	91.64 \pm 0.51	96.23 \pm 0.33	12
Pet- ether	36.61 \pm 0.62	50.11 \pm 0.32	77.12 \pm 0.14	83.23 \pm 0.45	92.28 \pm 0.66	20
Methanol	38.68 \pm 1.2	53.20 \pm 0.01	76.67 \pm 0.41	82.89 \pm 0.19	94.1 \pm 0.34	23
Aqueous	40.20 \pm 1.0	51.15 \pm 0.05	70.67 \pm 0.26	85.25 \pm 0.10	96.2 \pm 0.57	25

CONCLUSION

The preliminary phytochemical screening of the ethanol and water (hot) extracts of plant powder of *Terminalia Paniculata* were carried out using standard laboratory procedures, to detect the presence of different secondary metabolites (phytochemical constituents) such as alkaloids, flavonoids, saponins, tannins, steroid glycosides, phenols, coumarins, reducing sugars, protein, anthraquinones, quinines, fixed oils and fats. The generated results of the present study will provide data which is helpful in the correct identification and authentication of this medicinal plant and may help in preventing its adulteration. Antioxidant activity of *Terminalia Paniculata* fruits was done on pet-ether and methanol extract. Obtained results concluded that methanol extract of *Terminalia Paniculata* fruits possess varying degree of antioxidant activity than pet-ether extract when compared with standard ascorbic acid. The activities of the extract may be attributed to the presence of various secondary metabolites.

REFERENCES

1. Azra Kamal and Md. Matloob Raza Khan. Phytochemical evaluation of some medicinal plants. Indian Journal of Plant Sciences. 2014; 3 (4): 5-8.
2. Baravalia Yogesh, Nagani Krunal, Chanda Sumitra. Evaluation of pharmacognostic and physicochemical parameters of *Woodfordia fruticosa* Kurz. Flowers. Pharmacognosy Journal. 2011; 2 (18): 13-18.
3. Bruce SO, Onyegbule F A and Ezugwu CO. Pharmacognostic, physicochemical and phytochemical evaluation of the leaves of *Fadogia cienkowski* Schweinf (Rubiaceae). Journal of Pharmacognosy and Phytotherapy. 2019; 11(3): 52-60.
4. Choudhary Neeraj, Sekhon Bhupinder Singh. An overview of advances in the standardization of herbal drugs. Journal of Pharma Educational. Research. 2011; 2 (2): 55-70.
5. Behera Suraj Kumar. Phytochemical screening and antioxidant properties of methanolic extract of root of *Asparagus racemosus* Linn. International Journal of Food Properties 2018; 21 (1): 2681–268.