

Antioxidant Activity of *Citrullus colocynthis* from Dang Area of Rajasthan.

Dr. Manoj Kumar Meena; Neha Meena

Department of Botany, M.S.J. Govt. College, Bharatpur, Rajasthan (India) 321001

DOI: <https://doi.org/10.51583/IJLTEMAS.2025.140900085>

Abstract- In the present study of Dang region *Citrullus colocynthis* plant depending upon their availability and their use in curing various health ailments for antioxidant studies. The plant have antioxidant, anti-inflammatory, anti-microbial and anti-diabetic effects. The *Citrullus colocynthis* plant is useful for therapeutic as well as for curing of animal diseases because of the existence of phytochemical compounds or antioxidant activity. Ethno-medicinal plants play a vibrant role in inhibiting different disorder in human-being and cattle. Due to the availability of the secondary metabolites as stated above, help in the form of anti-diuretic, anti-analgesic, anti-cancer, anti-viral, anti-malarial, anti-fungal, anti-inflammatory activities. The goal of these studies is to discover an effective treatment for a variety of illnesses that are prevalent in today's society, as well as a way to postpone the signs of aging.

Keywords- Ailment, Antioxidant, DPPH, Phytochemicals, Qualitative analysis.

I. Introduction

The study of correlation between plants and people in surrounding them is called Ethno-botany. The dang region of Rajasthan is very rich in plant biodiversity. Due to occurrence of numbers of medicinal plants and herbs in dang region, It is also known as herbal region of Rajasthan. All over the world, human beings are suffering from various disorders, plant-like *Citrullus colocynthis* is safe and healthy to eat, also utilized for drug development, and has a top-level of scavenging wild flower. The main focus of this study was to evaluate bioactive compounds analysis of fruit extract of *Citrullus colocynthis*. Results show that fruit extract is more potent and is used as a powerful antioxidant and chemotherapeutic medicine, curing cancer. Thus, Antioxidants are naturally arbor in the medicinal plant, leaves, vegetables and roots that have protection mechanism and protect from various diseases. In the present investigations, fruit showed better amount of antioxidant activity in dose dependent manner. Consequently, highest DPPH inhibition activity was found at 100µl concentration.

II. Methodology

Collection site-In dang area of Rajasthan Dholpur and karauli districts are included, Dang area is one of the arid regions of Rajasthan due to disgraced barren land, ravines and extremely low level of water, therefore this situation is highly challenging to indigenous people for cultivation of plants and rearing of livestock for their livelihood. Most of the farmers of Dang area are also fighting for food.

Procedure

For DPPH analysis, Brand-Williams *et al.*, 1995 method was utilized. 100 ml conc. methanol was added to 10 gm sample (10:1) and incubated at 37°C temp for 24hrs. After this the above sample was filtered in a petri-plate for drying. Methanol was added in dry crude extract plate according to 1mg/ml and was collected in eppendorf tube. Different concentrations were taken ranging from 10 to 100 µl of sample and final volume was made up to 1 ml with methanol. To the above solution 1 ml of DPPH was added (0.01gm in 100 ml methanol) in all series one by one and was mixed properly, and incubated in dark for 30 min. Blank used was 1.5 ml methanol and control used was methanol + DPPH (1:1) and absorbance was taken at 517 nm.

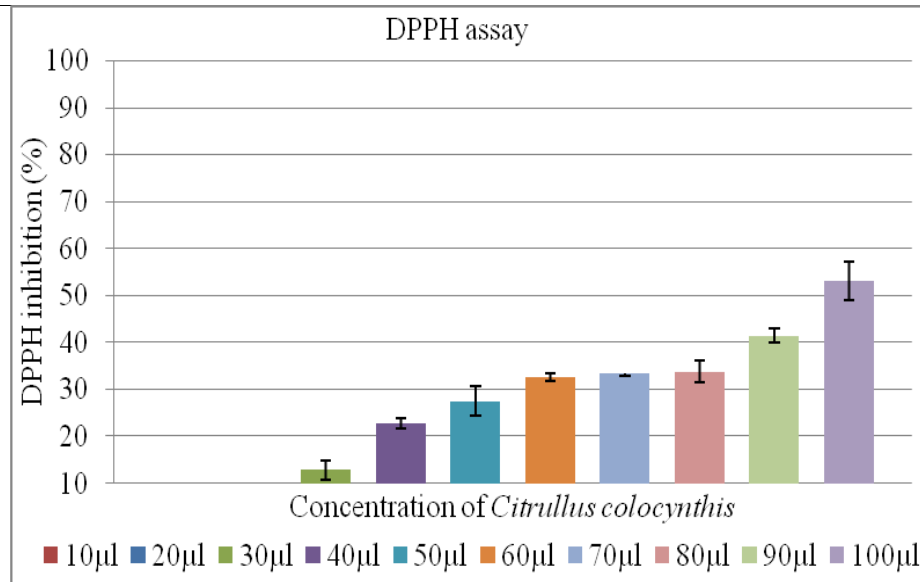
The DPPH scavenging activity was calculated in percentage by following formula:

$$\% \text{ inhibition of DPPH} = \frac{(AB - AS)}{AB} \times 100$$

Here- AB is blank absorbance and AS is sample absorbance.

III. Result and Discussion -

Radical scavenging activities of this plant were determined by DPPH assays at different concentrations. *Citrullus colocynthis* fruit part showed maximum scavenging activity at 100µl concentration. From the result it was evident that the plant showed good antioxidant activity with dose depended manner. Accordingly antioxidant activity was directly proportional to concentration of plant sample. *Citrullus colocynthis* fruit part as showed 53% DPPH inhibition activity at 100µl concentration. Consequently selected medicinal plant showed significant antioxidant potential.



DPPH activity of *Citrullus colocynthis* fruit

IV. Conclusion

In conclusion the results of the present study show that all selected plant contain the highest amount of antioxidant activity which corresponds to higher phyto-constituents like flavonoids, alkaloid in plants. Therefore the plants can be further harnessed for novel activity to inhibit cellular damage/bio-active compounds which is very well demonstrated by the current effort.



Figure-1 *Citrullus colocynthis* (L.) Schard.

Importance of the present Investigation-

Citrullus colocynthis plant play an important role in preventing various ailments in human and cattle. The outcome of this research work will reflect the system of updating the information that provides inducement for appropriate estimation of the plants as therapeutic agent in contrast to many human ailments. It is very essential for pharmaceutical chemist, phyto-chemists, pharmaceuticals and Entrepreneurs who are engaged in medical Industries.. Due to the availability of the secondary metabolites as stated above, help in the form of anti-diuretic, anti-analgesic, anti-cancer, anti-viral, anti-malarial, anti-fungal, anti-inflammatory activities. In the making of new herbal medicine, herbal plants are screened on the basis of phyto-chemical elements. Earlier study on phyto-chemical analysis show approximately parallel result because of the occurrence of the phyto-chemical elements. The phytochemical examination of the significant herbal plants are vital and have profitable attention in both study and drug companies for making new medicine for the treating numerous fatal diseases. The significant phyto-chemical characteristics are recognized in this investigation in local plants of Dang area, Rajasthan and will be beneficial in coughing various disorders in the present area of research.

Funding- This research received no external funding.

Conflicts of interest - There is no conflict of interest.

Acknowledgement- The authors are thankful to the department of Botany, M.S.J. Govt. P.G. College, Bharatpur, Rajasthan, India, for offering laboratory facilities to carry out this study.

References –

1. Hassan, S.A. and Sreea, M.A. 2013. Utilization of *Citrullus colocynthis* as Antibacterial Activity, Antioxidant and Food Preservation in Beef Luncheon Roll. *Middle East J. Applied Sciences*. 9(4):1190-1197.
2. Hatam, N.A., Whiting, D.A., Yousif, N.J. 1989. Cucurbitacin glycosides from *Citrullus colocynthis*. *Phytochemistry*. 28(4):1268-71.
3. Jayaraman, R. and Christina, A.J.M. 2013. Evaluation of *Balanites aegyptiaca* fruits on in vitro antioxidant activity and in vivo DEN/PB induced hepatotoxicity. *Int. J. Applied Res. in Nat Pro*. 6(1):1-9.
4. Kumar, S., Kumar, D., Manjusha, D., Saroha, K., Singh, N. and Vashishta, B. 2008. Antioxidant and free radical scavenging potential of *Citrullus colocynthis* (L.) Schrad. Methanolic fruit extract. *Acta Pharm*. 58:215-220.
5. Othman, S.S., Hamad, G.M., Zaid Hassan, S.A., Fayad, E. and Ali, S.M. 2022. Preparation, Identification and Antioxidant Evaluation of *Citrullus colocynthis* Root and Fruit Extracts against Doxorubicin in Male Rats. *Online J. Biological Sciences*. 22(1):75-86.
6. Rodge, S.V. and Biradar, S.D. 2013. Preliminary phytochemical screening and antimicrobial activity of *Citrullus colocynthis* (Linn.) Schard. *Ind. J. Plant Sci*. 2(1):19-23.
7. Zhang, Y., Li, X. and Wang, Z. 2010. Antioxidant activities of leaf extract of *Salvia miltiorrhiza* Bunge and related phenolic constituents. *Food Chem. Toxicol*. 48(10):2656-2662.