International Journal for Multidisciplinary Research
International Conference on Multidisciplinary Research & Studies 2023
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Ethnobotanical and Phytochemical Study of members of Cucurbitaceae from Ralegaon Region-A Review

Deshmukh N.M.[1*] Samarth V.D.[1], Kumre R.N.[2]

[1]Department of Botany, Indira Gandhi Kala Mahavidyalaya, Ralegaon Dist: Yavatmal
[2]Department of Chemistry, Indira Gandhi Kala Mahavidyalaya, Ralegaon Dist: Yavatmal

Abstract:

The plant species belonging to Cucurbitaceae family have a worldwide distribution, but most species can be found in tropical and subtropical countries. A number of the plants belonging to this family have reported important and biological pharmacological activities. Cucurbitaceae member plants are also in use in the folk medicinal system of India. The members of the Cucurbitaceae are annual or perennial herbaceous plants having climbing habit with characteristic tendrils. Plants of this family have many medicinal and nutritional benefits. Therefore, it is important to find out the Ethnobotanical uses in rural region of Ralegaon area and containing active agents possessing pharmacological activity in plants. In this study, we have documented some of the important plants viz., *Citrullus lanatus, Lagenaria siceraria, Bryonia lacinosa, Cucumis sativa, Coccinia grandis, Cucurbita pepo, Momordica dioica, Momordica charantia, Cucumis callosus, and Luffa acutangular* located in Ralegaon region.

Keywords: Cucurbitaceae, Medicinal, Ralegaon region.

Introduction

Ralegaon is tehsil place, town in Yavatmal District of Maharashtra. It includes 146 villages, covered 762 km² areas. Most of the area of ralegaon taluka is covered by forest. A number of villages are situated at edge of the forest. So, the population is mainly rural and agriculture and agricultural labor are the major occupations of the rural people. [2] They use folk medicinal practices for the treatment of many diseases and illness which is found around us. Plants were used as remedies to cure many diseases and infections during ancient time. Medicinal plants are easily available, cheap and affordable. The plants have medicinal importance due to the presence of certain chemical substances that produce specific physiological actions on the human body. The most essential of these bioactive constituents of plants are alkaloids, tannins, saponins, flavonoids and phenolic compounds. [1] The gourd family, Cucurbitaceae is one of the most important family, which includes approximately 125 genera and 960 species. [3] The family Cucurbitaceae includes a large group of cultivating crops like cucumbers, watermelon, luffa, etc. and medicinally important plants like bottle gourd (Lavki), bitter gourd (Karela) etc. which are medicinally important. The present study is to review the pharmacologically and biologically important plants and phytochemicals present in cucurbits and to understand their pharmacological activity

Material & Method

A Systematic survey of the 10 species of family Cucurbitaceae growing throughout the Ralegaon region was carried out. To find out the traditional medicinal uses of this plants visited the tribals, rural population, and vaidus in the Ralegaon region. The information was collected from them about the plants of cucurbitaceae member used to treat diseases. Also phytochemical constituent's information was collected of those plants used for disease treatment. A literature review was conducted to study the phytochemistry & acknowledged.

Result and Discussion

Ethnobotanical investigation and survey has led to the documentation of family cucurbitaceae plants used by tribals, rural people and vaidus for treatment of diseases like fever, infertility, heatstroke, worm infection etc. They gave information about their traditional medicinal applications in curing treatment of

various diseases. Out of 10 species, 10 were used medicinally, 9 were edible, for humans. The results of the present study are discussed below.

Sr. No	Scientific Name of Plant	Common Name	Phytochemicals	Pharmaceutical and Biological activities
1	*Bryonia lacinosa* L.	Marble,Vine, Shivalingi, Shivaling	saponin molecules, flavonoids, phenolic acids, sugars, punicic acid, goniothalamin and gluccomannan. The polysaccharides and fatty acids.[4]	Antimicrobial, antibacterial, analgesic, Anti-inflammatory, androgenic, antipyretic, antidiabetic, anti-asthmatic, anti-oxidant, anti-tumor[4]
2	*Citrullus lanatus* (Thunb.) Mat. & Nak.	Watermelo, Kharbuza, Tarabuuza, Tarabuuja.	alkaloids, flavanoids, tannins, amino acids, carbohydrates, cardioglycosides, terpenoids, steroids, carotenoids, oils and fats, vitamins, Calcium, Iron, Magnesium, Phosphorus, Potassium, and Zinc.[10]	Antibacterial, antifungal, antimicrobial, antiulcer, antioxidant, anti-inflammatory, anti-hyperglycemic, anti-cancer, anti-diabetic, anti-hepatotoxic, anti-inflammatory, anti-helminthics, anti-virus, anti-bacterial, anti-microbial [10]
3	*Coccinia grandis* (L.) Voigt	Ivy Gourd, Kundru, Tondli	Steroid, carbohydrates, tannins, flavonoids, saponins, alkaloids b-amyrine, lupeol, cucubbitacin, cephalandrol, cephalandrine.[15]	Antibacterial, Anthelmintic, Antioxidant, antiulcer, antimalarial, anti-inflammatory, antipyretic, analgesic, hypoglycaemic, antifungal, Anti-dyslipidemic, Antitussive, anticancer, antitussive, mutagenic activity.[14]
4	*Cucumis callosus* (Rottler) Cogn.	Muskmelon, Sweetmelon	alkaloids, carbohydrates, proteins/amino acids, glycosides, fixed oils & fats, phenolics, tannins, phytosterols, flavonoids, Saponins.[21]	antioxidant, anti-inflammatory, antidiabetic. [22]
5	*Cucumis sativus* L.	Cucumber, garden cucumber, apple cucumber, Khira, Kakadi,	Flavonoids, alkaloids, glycosides, saponins, tannins, terpenoids, carbohydrates, and sterols.[12]	anti-bacterial activity, antifungal activity, cytotoxic activity, Antacid & Carminative activity, Activity against ulcerative colitis, Hepetoprotective activity, Hypoglycemic and. Hypolipidemic activity.[13]
6	*Cucurbita pepo* L.	Pumpkin, Field pumpkin, kaddu, Kohala, Bhopla	Steroid, Protein, steroids, tannins, flavonoids, triterpenoids, phenols.[16]	Antitumor activities, Antimicrobial, Antioxidant, Hypoglycemic and hypolipidemic.[17]
7	*Lagenaria*	Bottle Gourd,	Flavonoids, Protein,	Analgesic and anti-inflammatory,

	siceraria (Mol.) Standl.	Bitter calbash gourd, Lauki, Dudhi	Triterpenes, Volatile essential oil, Carbohydrates.[11]	Diuretic activity, Anthelmintic activity, Antihepatotoxic activity, Immunomodulatory activity, Antistress and adaptogenic property, Antimicrobia, Antioxidant. [11]
8	*Luffa acutangular* (L.) Roxb.	Wild luffa, Ban turai, kadu-dodaki	Proteins, Flavonoids, Anthraquinone, Fatty Acids, Saponin Triterpene.[20]	hepatoprotective, antidiabetic, antihyperlipidemic, antioxidant, anticancer, antibacterial, CNS depressant, immunomodulatory, and anti-ulcer activity. [20]
9	*Momordica charantia* L.	Bitter Gourd, Karela, karali,	Saponins, proteins, polypeptide, steroid, pyrimidine nucleoside.[19]	Anti-cancer, Antivirals, Analgesic Effects, Anti-inflammatory, Hypotensive action, Anti-fertility effects.[19]
10	*Momordica dioica* Roxb. ex Willd	Ban Karela, Kartoli	Protein, lipid, fibre, carbohydrate, potassium, sodium, calcium, iron, zinc, fat, vitamins, alkaloids, steroids, triterpenoids, and saponins, flavonoids[18]	diuretic, laxative, hepatoprotective, antivenomous, anti-hypertensive, anti-inflammatory, anti-asthmatic, antipyretic, anti-leprosy, antidiabetic, and antidepressant properties but also its leaves have anti-helminthic, aphrodisiac, anti-hemorrhoidal, hepatoprotective, anti-bronchitic, antipyretic, anti-asthmatic, and analgesic properties.[18]

Conclusion

In the present study, we reviewed phytochemical constituents, pharmacological properties and medicinal uses of certain plant species of Cucurbitaceae in Ralegaon region. Different parts of the plants such as stem leaf, root, tuber, fruit and seed of the above members of this family have been studied extensively by many researchers. The ethnobotanical and phytochemical review undertaken in this plant family displayed multidisciplinary usage of these plants in curing of various types of diseases. Considering its huge phytochemical and variety of pharmacological activities, the Cucurbitaceae members could be proposed as good candidates for discovering new drugs as well as agriculture-based entrepreneurship.

Acknowledgement

The authors wish to thank the tribals, rural peoples, vaidus of villages in Ralegaon region. who wholeheartedly cooperated by sharing their traditional medicinal knowledge with us.

References

1. Rajasree R. S., Sibi P. I., Femi Francis, Helen William, “Phytochemicals of Cucurbitaceae Family – A Review” International Journal of Pharmacognosy and Phytochemical Research, 2016, 8(1), 113-123.
2. Rahmatullah M., Biswas A., Haq W.M., Seraj S., Jahan R., “Use of cucurbitaceae family plants in folk medicinal system of Bangladesh” Chronicles of Young Scientists, 2012, Vol.3 (3), 212-222.
3. Jeffrey C. “A new system of Cucurbitaceae” Botanicheskii Zhurnal, 2005, 90, 332-335.
4. Kaurav H., Choudhary S., Chaudhary G., “An Ayurvedic Herbal Plant ‘Bryonia laciniosa’ with its Ethnomedicinal Significance”, Journal of Drug Delivery & Therapeutics, 2021,11(3-s), 137-141.
5. Jamuna S., Karthika K. and Paulsamy S., “Phytochemical and pharmacological properties of certain medicinally important species of Cucurbitaceae family – a review” Journal of Research in Biology, 2015, 5(6), 1835-1849.
6. Avinash T. S. and Rai V. R. “An ethanobotanical investigation of cucurbitaceae from South India: A review” Journal of Medicinal Plants Studies, 2017, 5(3), 250-254.

7. Rahman A H M M, "Systematic studies on Cucurbitaceae family at Rajshahi division, Bangladesh" Plant. Vol. 1, No. 2, 2013, 10-15.
8. Sri Rama Murthy K., Ravindranath D., Sandhya Rani S., Pullaiah T., "Ethnobotany and distribution of wild and cultivated genetic resources of Cucurbitaceae in the Eastern Ghats of Peninsular India" Topclass Journal of Herbal Medicine, June, 2013, Vol. 2(6),149-158.
9. Tupe S.B., Patil P.D., Thoke R.B. and Aparadh V.T., "Phytochemical Screeing in some Cucurbitaceae members" International Research Journal of Pharmaceutical and Applied Sciences" 2013, 3(1), 49-51.
10. Deshmukh C.D., Jain A., Tambe M.S., "Phytochemical and Pharmacological profile of Citrullus lanatus (THUNB)", Biolife, 2015, 3(2), 483-488.
11. Prajapati R.P., Kalariya M., Parmar S.P., Sheth N.R., "Phytochemical and pharmacological review of Lagenaria sicereria", Journal of Ayurveda & Integrative Medicine, 2010, 266-272.
12. Mandey J.S., Wolayan F.R., Pontoh C.J., Sondakh B.F.J., "Phytochemical Characterization of Cucumber (Cucumis sativus L.) Seeds as Candidate of Water Additive for Organic Broiler Chickens", Journal of Advanced Agricultural Technologies, Vol. 6. 2019, 61-64.
13. Sahu T., Sahu J., "Cucumis Sativus (Cucumber): A Review on Its Pharmacological Activity", Journal of Applied Pharmaceutical Research, Vol.3. 2015, 4-9.
14. Pekamwar S. S., Kalyankar T.M., Kokate S.S., "Pharmacological Activities of Coccinia Grandis: Review", Journal of Applied Pharmaceutical Science, Vol. 3 (5), 2013, 114-119.
15. Hossain S.A. Uddin S.N., Salim M.A., Haque R., "Phytochemical and Pharmacological screening of Coccinia grandis Linn", Journal of Scientific and Innovative Research, 2014, 3(1), 65-71.
16. Srividhya V., Thangavel S., Satheeskumar G.K., Kanupriya J., Sivakumar A.G., "Antioxidant potential and Phytochemical analysis of fruit extract of Cucurbita pepo", International Journal Curr. Res. Chem. Pharm. Sci, 2019, 6(3), 22-32.
17. Adnan M., Gul S., Batool S., Fatima B., Rehman A., Yaqoob S., Shabir H., Yousaf T., Mussarat S., Ali N., Khan S.N., Rahman H., Aziz M.A., "A review on the ethnobotany, phytochemistry, pharmacology and nutritional composition of Cucurbita pepo L.", The Journal of Phytopharmacology, 2017, 6(2), 133-139.
18. Talukdar S.N., Hossain M.N., "Phytochemical, Phytotherapeutical and Pharmacological Study of Momordica dioica", Evidence-Based Complementary and Alternative Medicine, 2014, 1-11.
19. Raman A., Lau C., "Anti-Diabetic Properties and Phytochemistry Momordica charantia L. (Cucurbitaceae)", Phytomedicine, Vol. 2, 1996, 349-362.
20. Shendge P.N., Belemkar S., "Therapeutic Potential of *Luffa acutangula*: A Review on Its Traditional Uses, Phytochemistry, Pharmacology and Toxicological Aspects",Frontiers in Pharmacology, Vol.9, 2018, 1- 14.
21. Chand T., Bhandari A., Kumawat B., Sharma A., Bansal V., Pareek P., "Research Journal of Pharmaceutical, Biological and Chemical Sciences" April 2012, Vol. 3, (2), 570-576.
22. Panda S.P., Reddy R. A., Panigrahy U. P., "Asian Journal of Pharmaceutical and Clinical Research" 2018, Vol 11, (10), 438-442.
23. https://www.itfnet.org/v1/2016/05/watermelon-name-taxonomy-botany/
24. https://www.efloraofgandhinagar.in/climbers/luffa-cylindrica
25. http://www.flowersofindia.net/catalog/slides/Bottle%20Gourd.html
26. https://climbers.lsa.umich.edu/?p=252
27. http://theworldwidevegetables.weebly.com/cucumis-sativus-cucumber.html