

Estimation of Flavonoids in the *Amaranthus viridis* Linn A Review

Akshada V. Tambe¹, Rutika S. Wakchaure², Omkar R. Zaware³, Akshada Dhobale⁴,
Rahul P. Lokhande⁵

Bachelor of Pharmacy, Samarth Institute of Pharmacy, Belhe, Pune, Maharashtra, India^{1,2,3,4}
Department of Pharmaceutical Chemistry, Samarth Institute of Pharmacy, Belhe, Pune, Maharashtra, India⁵

Abstract: *Amaranthus Viridis*, is traditionally used for treatment of constipation, inflammation, eczema, bronchitis, anaemia, leprosy. Flavonoids are a group of polyphenolic compounds, which are widely distributed throughout the plant kingdom. Flavonoids like Rutin and Quercetin possess many biochemical effects like inhibition of enzymes, regulatory role on different hormones and pharmacological activities like antimicrobial, antioxidant, and anticancer, antihepatotoxic, protection of cardio vascular system. An HPLC method was developed for the estimation of rutin and quercetin from methanol herbal extract of *Amaranthus viridis*. Flavonoids like Rutin and quercetin possess many biochemical effects like inhibition of enzymes, regulatory role on different hormones and pharmacological activities like antimicrobial, antioxidant, and anticancer, antihepatotoxic, protection of cardio vascular system.

Keywords: *Amaranthus viridis*, Rutin, Quercetin, Pharmacological activities.

REFERENCES

- [1]. The pharmacological potential of rutin, by Aditya Ganeshpurkar and Ajay K. Saluja. Saudi pharmaceutical journal SPJ
- [2]. Estimation of Rutin and Quercetin in *Amaranthus viridis* Linn by HPLC by Ashok Kumar, K Lakshman, k. N. Jayaveera
- [3]. Abarikwu S.O., Otuechere C.A., Ekor M., Monwuba K., Osobu D. Rutin ameliorates cyclophosphamide-induced reproductive toxicity in male rats. *Toxicol. Int.* 2012;19 (2):207–214.
- [4]. Abdel-Raheem I.T. Gastroprotective effect of rutin against indomethacin-induced ulcers in rats. *Basic Clin. Pharmacol. Toxicol.* 2010;107(3):742–750. [PubMed] [Google Scholar]
- [5]. Almeida J.S., Benvegnú D.M., Bouffleur N., Reckziegel P., Barcelos R.C., Coradini K., de Carvalho L.M., Bürger M.E., Beck R.C. Hydrogels containing rutin intended for cutaneous administration: efficacy in wound healing in rats. *Drug Dev. Ind. Pharm.* 2012;38(7):792–799.
- [6]. Alonso-Castro A.J., Domínguez F., García-Carrancá A. Rutin exerts antitumor effects on nude mice bearing SW480 tumor. *Arch. Med. Res.* 2013;44(5):346–351.
- [7]. The Pharmacological Activity, Biochemical Properties, and Pharmacokinetics of the Major Natural Polyphenolic Flavonoid: Quercetin
- [8]. Gaber El-Saber Batiha, Amany Magdy Beshbishy, [...], and Yaser Hosny Ali Elewa
- [9]. Manab Mandal, Debabrata Misra, Narendra Nath Ghosh, Vivekananda Mandal. Physicochemical and elemental studies of *Hydrocotyle javanica* Thunb. For standardization as herbal drug. *Asian Pacific Journal of Tropical Biomedicine.* 2017; 7(11): 979-986.
- [10]. Neelesh Malviya and Sapna Malviya. Herbal drug technology. CBS Publishers and Distributors Pvt Ltd, New Delhi. 2019; 1sted: 3-30
- [11]. Jain C, Khatana S and Vijayvergia R. Bioactivity of secondary metabolites of various plants: a review. *International Journal of Pharmaceutical Sciences and Research.* 2019; 10(2): 494-504.
- [12]. Sowjanya Pulipati, P. Srinivasa Babu, M. Lakshmi Narasu. Phytochemical and pharmacological potential of *Amaranthus viridis* L. – a review. *International Journal of Phytomedicine.* 2014; 6(3): 322-326.

- [13]. Rai Puneet Kumar, Jindal Shammy, Gupta Nitin and Rana Rinu. An inside review of *Amaranthus spinosus* Linn: a potential medicinal plant of India. *International Journal of Research in Pharmacy and Chemistry*. 2014; 4(3): 643-653.
- [14]. Bagepalli Srinivas Ashok Kumar, Kuruba Lakshman, Korala Konta Narsimha Jayaveera, Devangam Sheshadri Shekar, Chinna Swamy Vel Muragan and Bachappa Manoj. Antinociceptive and Antipyretic Activities of *Amaranthus viridis* Linn in Different Experimental Models. *Avicenna Journal of Medical Biotechnology*. 2009; 1(3): 167-171.
- [15]. Jhade D, Ahirwar D, Jain R, Sharma N, Gupta S. Pharmacognostic standardization, physico- and phytochemical evaluation of *Amaranthus spinosus* Linn. Root. *Journal of Young Pharmacists*. 2011; 3(3): 221-225.
- [16]. WHO. Quality control methods for medicinal plants. Geneva. 2002; 28-31.
- [17]. Vinod D. Rangari. *Pharmacognosy and Phytochemistry*. Career Publication, India. 2014; 3rd ed: 56-63
- [18]. Kalpna Rakholiya, Mital Kaneria and Sumitra Chanda. Physicochemical and Phytochemical Analysis of Different Parts of Indian Kesar Mango-A unique variety from Saurashtra Region of Gujarat. *Pharmacognosy Journal*. 2016; 8(5): 502-506.
- [19]. Harborne JB. *Phytochemical methods-a guide to modern techniques of plant analysis*. Chapman and Hall, London. 1984; 2nded: 4-16.
- [20]. Punasiya Rakesh, Pillai Sujit, Yadav Janeshwer. Isolation and identification of compounds from the leaves extract of *Hibiscus syriacus* L. *Asian Journal of Pharmacy and Technology*. 2015; 5(1): 8-12
- [21]. Khadabadi S S, Deore S L, Baviskar B A. *Experimental Phytopharmacognosy-Phytochemical Studies*. Nirali Prakashan, India. 2013; 2nded: 4.7
- [22]. V. Soni, A. K. Jha, J. Dwivedi and P. Soni. Qualitative and Quantitative Determination of Phytoconstituents in Some Antifertility Herbs. *Indian J Pharm Sci*. 2018; 80(1): 79-84.
- [23]. S. J. Daharwal*, Suman Shrivastava. Preliminary Phytochemical Screening and HPTLC Fingerprinting of Extracts of *Thuja occidentalis*. *Research Journal of Pharmacy and Technology*. 2019; 12(10): 4782-4784
- [24]. Leena Seasotiya, Priyanka Siwach, Anupma Malik, Sheema Bal. Phytochemical evaluation and HPTLC fingerprint profile of *Cassia fistula*. *International Journal of Advances in Pharmacy, Biology and Chemistry*. 2014; 3(3): 604-611.
- [25]. K. Karthika, S. Paulsamy. TLC and HPTLC Fingerprints of Various Secondary Metabolites in the Stem of the Traditional Medicinal Climber, *Solena amplexicaulis*. *Indian Journal of Pharmaceutical Sciences*. 2015; 77(1): 111-116.
- [26]. Kirtikar KR, Basu BD. *Indian Medicinal Plants*. Dehra Dun, India: International book distributors, 1987; 3:2061-2062.
- [27]. Sena L P. *Plant Foods for Human Nutrition*. 1998; 52(1).
- [28]. Ashok Kumar, *Arch. Biol. Sci.*, Belgrade. 2010; 62 (1):185-189.
- [29]. Manandhar NP. *Plants and People of Nepal* Timber Press. Oregon, 2002:6.
- [30]. Duke JA, Ayensu ES. *Medicinal Plants of China* Reference Publications, Inc. 1985; 20-24.
- [31]. Standley PC. *Amaranthaceae*. *North American Flora*. 1917; 21:95-169