

## Review Article

**A Review on Pharmacological Effects of *Hemigraphis colorata***

Niya Panthallookaran\*, K. Krishnakumar, Hareesh babu E\*

Dept. of Pharmaceutical Chemistry, St James College of Pharmaceutical Sciences, Chalakudy, Kerala  
St James Hospital Trust Pharmaceutical Research Centre (DSIR Recognized), Chalakudy, Kerala**\*Corresponding author**

Niya Panthallookaran

Email: [stjamespharmacyproject@gmail.com](mailto:stjamespharmacyproject@gmail.com)

**Abstract:** *Hemigraphis colorata* (Acanthaceae), an exotic plant adapted to India which is commonly known as Red Ivy. This plant has an incredible potency of wound healing, hence familiar in name 'Murikootti' or 'Murianpacha'. The plant has several names such as Aluminium plant, Red flame Ivy, Waffle plant, Java Ivy Cemetery plant, Metal leaf, etc. This literature review is intended to collect all the possible information about *Hemigraphis colorata*.

**Keywords:** *Hemigraphis colorata*, phytochemistry & pharmacological effects.

**INTRODUCTION**

*Hemigraphis colorata* (syn; *Hemigraphis alternata*) is a tropical perennial herb reaches in to a height of 15 to 30 cm and mainly grown as an ornamental plant. Since, it has a filament of the outer stamen bearing Brushes, it is known as Hemigraphis ('half writing') [1]. This is a prostrate herb with rooting branches, opposite broad chordate and toothed leaves and terminal heads of small white flowers. It is characterized by the greyish green leaves, stained with red purple above and darker purple beneath [2]. It blooms throughout the year. Flowers are white in colour, five lobed, bell shaped [3-6]. Traditionally it can

be used to treat the fresh wounds and also used in the treatment of cuts, ulcers, inflammation [7], internally to cure anaemia [1], haemorrhoids, diuretic, gallstones and diabetes mellitus [8].

**PLANT PROFILE****Scientific classification**

Kingdom : Plantae

Order : Lamiales

Family : Acanthaceae

Genus : Hemigraphis

Species : Colorata



Fig 1: Plant picture of *Hemigraphis colorata*

**MEDICINAL USES**

In folk medicine, the plant is used to heal wounds, cuts, ulcers. Used to promote urination, stop

dysentery, treat venereal diseases, to heal haemorrhoids [7, 8]. Internally it is used to cure anaemia [8], traditionally leaves are used to treat gall stones,

excessive menstruation and as a contraceptive. The crude leaf paste promotes excision wound healing [9, 10]. The whole plant of *H. colorata* is ground in to a paste with water and used for diabetes mellitus [11].

**PHYTOCHEMISTRY**

The phytoconstituents in plants can be used for various medicinal purposes. The phytochemical constituents on *H. colorata* were identified by examining the crude extracts of its leaves and stem

using various solvents. The phytoconstituents are phenols, saponins, flavonoids, terpenoids [12], coumarins, carbohydrates, carboxylic acid, xanthoproteins, tannins, proteins, alkaloids, steroids and sterol [2].

The leaves contain flavonoids, polyphenols, tannins, high potassium and low sodium levels; stem contains saponins and tannins, roots contain flavonoids and polyphenols.

**Table 1: the phytochemical characteristics of Hemigraphis colorata**

COMPOUNDS	PETROLEUM ETHER	CHLOROFORM	ETHANOL	WATER
ALKALOIDS	-	+	-	+
PHENOLS	+	+	+	+
FLAVANOIDS	+	+	+	+
SAPONINS	+	+	+	-
STEROIDS	+	+	+	+
TANNINS	+	-	+	-
CARBOHYDRATES	-	+	+	+

**PHARMACOLOGICAL EFFECTS**

**Anti-bacterial activity**

The antibacterial activity against Acinetobacter species and Streptococcus aureus is shown by the benzene extract of *H. colorata* Leaves [13]. This is due to the presence of phenolic contents in the plant extract [14].

**Anti-diabetic activity**

The n-hexane & ethanol extracts of the whole plant were found to lower the blood glucose levels in glucose fed rats. The presence of steroids & coumarins in the plant extract is responsible for the hypoglycaemic and anti-diabetic effects [8].

**Wound healing activity**

The crude leaf paste provides a faster wound contraction & epithelialisation in mice [15]. The herbal scaffold made from chitosan was highly haemostatic and can be effectively applied for infectious wounds [16]. The excision and incision wound model studies revealed that methanolic extract is comparable to standard reference Vokadine [2].

**Anti-oxidant activity**

The glycosides present in ethanolic extract of the whole plant are responsible for the antioxidant effect. Phenolic compounds are effective hydrogen donor which makes them a good antioxidant [14]. The phenolic acids such as chlorogenate, cinnamate, coumarate, gallate and ferulate present in the plant acts as pro-oxidants and exhibits free radical scavenging activity [17, 18].

**Miscellaneous activity**

The usage of this plant in green technology, to identify the potential plant to fight against sediment transport, it is found that the plant gives a least sediment value [18]. Volatile indoor pollutants from paints, odorants, cleaning agents etc., can cause various ailments to people during exposed to them. *H. colorata* was recognized as one of the ornamentals which can remove harmful volatile organic compounds to maintain the quality of indoor air [19].

**CONCLUSION**

*H. colorata* is an ethno-medicinal plant which possesses considerable level of bioactive compounds and therefore, these species can be used as a potential source of drugs. It is having the properties such as antibacterial, antidiabetic, wound healing, and antioxidant activities. This herb is a promising wound healing promoter but a proper phytochemical and pharmacological study is the needed which provides new pharmacological avenues for this plant. This plant can be easily available and cultivated, therefore cannot be a shortage of raw materials for the phytochemical investigation.

**REFERENCES**

- Gledhill D. The Names of Plants. Edition 4, Cambridge University Press, New York, 2008: 195.
- Saravanan J, Shariff WR, Joshi NH, Varatharajan R, Joshi VG, Karigar AA. Preliminary Pharmacognostical and Phytochemical Studies of Leaves of Hemigraphis colorata. Research Journal of Pharmacognosy and Phytochemistry. 2010; 2(1):15-7.

3. Gamble JS. Flora of the Presidency of Madras. The Authority of the secretary of state of Indian council, India 1921; 2:1344.
4. Anonymous. The Glossary of Indian Medicinal Plants. Council of Scientific and Industrial Research, New Delhi, India, 1986: 224.
5. Anonymous. Dictionary of Indian Medicinal Plants. Central Institute of Medicinal and Aromatic Plants, Lucknow, India, 1992: 416.
6. Narasimhan SNY. Medicinal Plants of India. Karnataka, India, Vol. I, 1997: 73.
7. Silja VP, Varma KS, Mohanan KV. Ethnomedicinal plant knowledge of the Mullu kuruma tribe of Wayanad district, Kerala. 2008; 7:604-612.
8. Gayathri V, Lekshmi P, Padmanabhan RN. Antidiabetes and hypoglycaemic properties of *Hemigraphis colorata* in rats. International J. Pharam Science. 2011; 4(2):224-328.
9. Bhargavi S, Kumar A, Babu R. Ancient and modern view of wound healing: Therapeutic treatments. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 2011 Jul; 2(3):474.
10. Pawar RS, Toppo FA. Plants that heal wounds. A review. Herba Polonica. 2012; 58(1):47-65.
11. Bourdy G, Walter A. Maternity and medicinal plants in Vanuatu I. The cycle of reproduction. Journal of ethnopharmacology. 1992 Oct 1; 37(3):179-96.
12. Sheu J, Jayakumar T, Chang C, Chen Y, Priya S, Ong E, Chiou H, Elizebeth AR. Pharmacological actions of an ethanolic extracts of the leaves *Hemigraphis colorata* and *Clerodendron phlomoides*. Clinical Molecular Medicine 2012; 3:1-3.
13. Anitha VT, Marimuthu J, Jeeva S. Anti-bacterial studies on *Hemigraphis colorata* (Blume) HG Hallier and *Elephantopus scaber* L. Asian Pacific journal of tropical medicine. 2012 Jan 1; 5(1):52-7.
14. Akhil TT, Prabhu P. Evaluation of Anti-Oxidant, Anti-Inflammatory and Cytotoxicity Potential of *Hemigraphis colorata*. International Journal of Pharmaceutical Sciences and Research. 2013 Sep 1; 4(9):3477.
15. Subramoniam A, Evans DA, Rajasekharan S, Nair GS. Effect of *Hemigraphis colorata* (Blume) HG Hallier leaf on wound healing and inflammation in mice. Indian journal of pharmacology. 2001 Jul 1; 33(4):283-5.
16. Annapoorna M, Kumar PS, Lakshman LR, Lakshmanan VK, Nair SV, Jayakumar R. Biochemical properties of *Hemigraphis alternata* incorporated chitosan hydrogel scaffold. Carbohydrate polymers. 2013 Feb 15; 92(2):1561-5.
17. Deepak RP, Renjima V, Murugan K. Antioxidant Potential of *Hemigraphis colorata* (Blume) HG Hallier and *Rhinacanthus nasutus* (Linn). Kurz.-A Search. In Proceedings of the 2007 Kerala Science Congress (03-40), Kannur, Kerala 2007 (pp. 1-4).
18. Salim NA, Tajuddin RM. Effectiveness of local plants on sediment control for sustainable River Management.
19. Yang DS, Pennisi SV, Son KC, Kays SJ. Screening indoor plants for volatile organic pollutant removal efficiency. HortScience. 2009 Aug 1; 44(5):1377-81.
20. Priya MD. Review on pharmacological activity of *Hemigraphis colorata* (Blume) HG Hallier. Mol Med. 2012; 3:1-3.
21. Biju CR, Nimmi M, Byju K, Arunlal VB, Babu G. A Review on *Hemigraphis colorata* Blume. International Journal of Innovative Pharmaceutical Sciences and Research: 2015; 3(7): 932-940.