

HEMIGRAPHIS COLORATA: A REVIEW

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ABSTRACT

Hemigraphis colorata (syn: *Hemigraphis alternate*) is a tropical perennial herb chiefly grown as an ornamental plant, belongs to the family Acanthaceae. In folk medicine, the leaves are ground into a paste and applied on fresh cut wounds to promote wound healing and used to treat anaemia. In Kerala, the plant is popular in the name 'murikootti' because of its incredible potency to heal wounds. Hemigraphis means 'half writing' because the filament of the outer stamen bear brushes. This literature review was intended to summarise traditional uses of *H. Colorata*.

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

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INTRODUCTION

The plant *Hemigraphis colorata* commonly called as purple waffleplant belongs to the family Acanthaceae. It is a prostrate growing plant with spreading, rooting stems. Its starchy leaves are slender and lance shaped with toothed, scalloped or lobed margins. They are greyish green stained with red purple above and darker purple beneath [1]. The tiny white flowers grow intermittently throughout the year. This plant reaches a height of 15-30 cm and has an indefinite spread. It is claimed in folk medicine that the plant has very good wound healing activity [2, 3].

PLANT PROFILE

Scientific classification

Kingdom	:	Plantae
Order	:	Lamiales
Family	:	Acanthaceae
Genus	:	Hemigraphis
Species	:	Colorata
Synonym	:	Hemigraphisalternate



Fig. 1: leaves of *Hemigraphis colorata*

DISTRIBUTION

-Ornamental indoor and outdoor plant for its attractive foliage.

-Cultivated in manila and native to tropical Malaysia, South - East Asia [4].

PHYTOCHEMISTRY

Phytochemicals have been used as drugs, dyes, and food supplements. The phytochemicals are variety of secondary metabolites, with contributive curative property. The phytoconstituents present in *H. colorata* are saponins, flavonoids, terpenoids [5] coumarins, carbohydrates, carboxylic acid, xanthoproteins, phenols, s

tannins, proteins, alkaloids, steroids and sterol [1].

Table:1 Result showing phytochemical constituents of *Hemigraphis colorata*

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

PARTS UTILIZED

Mainly leaves are used for the medicinal purpose. The leaves are opposite, ovate to cordate about 2-8cm long and 4-6cm wide, bearing well defined veins. They are greyish green stained with red purple above and darker purple beneath. 100 grams of fresh leaves reported to yield 0.351 grams of potassium [6, 7, 8].

TRADITIONAL USES

Leaves are mainly used to cure for wound, gallstones. It is used as diuretic. In Java, leaves are used in treatment of bloody dysentery and haemorrhoids [9, 10]. The leafy decoction used to treat excessive menstruation. Externally used for skin complaints. Paste of leaves applied to fresh cut wounds to stop bleeding and promote healing [2, 3] and also used for anaemia [10]. The leaf buds squeezed in water and drunk for 4 days as contraceptive and to induce sterility [11].

PHARMACOLOGICAL STUDIES

Phytoremediation/Indoor Air Purifying Plant:

Volatile organic compounds (VOCs) including benzene, xylene, hexane, heptane, octane, decane, and trichloroethylene and methylene chloride have been known to cause various illnesses when people are exposed to them in indoor spaces. Studies have shown that *H. colorata* had the highest removal rates of VOCs which is known as phytoremediation [12].

Antibacterial Activity

Antibacterial screening showed the benzene extract demonstrated maximum zone of inhibition against the pathogen *Acinobacter* species and *S. aureus* [13] due to the presence of phenolic compounds [14].

Wound healing Activity

Study evaluated the wound healing activity of methanolic extract ointment of dried leaves of *H. colorata* in albino rats, using excision and incision models [15]. In the excision model, results showed significantly higher wound closure than control while in the incision model, the tensile strength of treated wounds was

higher^[16]. The results encourage the use of *H.colorata* in the topical management of wounds^[1].

Anti -Diabetic Activity

Study of n-hexane and ethanol extracts of whole plant showed lowering of blood glucose in glucose fed rats. The effect was attributed to steroids and coumarins present in the extract^[10].

Anti-oxidant/Anti-inflammatory/Cytotoxicity

The antioxidant activity mainly due to the presence of phenolic compounds^[14]. Ethanolic extract of leaves of *H.colorata* have more antioxidant and anti-inflammatory activity than chloroform and acetone extracts. The plant also has cytotoxicity against DLA lines up to a concentration of 200µg/mL in short term bioassay^[17, 18].

CONCLUSION

H.colorata is a traditional medicinal plant mainly used to treat cuts and wounds. To find the specific constituent in *H.colorata*, a systematic screening and characterisation of active principle is needed. Such studies will help in the development of novel drugs.

REFERENCES

Saravanan J, Shariff WR, Narasimhachar HJ, Varatharajan R, Josi VG, Asif AK. Preliminary pharmacognostical and phytochemical studies of leaves of *Hemigraphis colorata*. Research Journal of Pharmacognosy and Phytochemistry, 2010; 2:15-217.

Bhargavi CHS, Kumar ADA, Kumar NVSP, Babu VR. Ancient and Modern View

of Wound Healing: Therapeutic Treatments. RJPBCS, 2011; 2: 474-479

Pawar RS, Toppo FA. Plants that heal wounds- A review. KerbaPolonica 2012; 58:47-65.

Irene Skaar, Christopher Adaku, Monica Jordheim, Robert Byamukama, Bernad Kiremire and Qyvind M. Anderson. Purple anthocyanin colouration on lower (abaxial) Leaf surface of *Hemigraphis colorata* (Acanthaceae). Phytochemistry. 2014; 105: 141-146.

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.

Anonymous. The Glossary of Indian Medicinal Plants. Council of Scientific and Industrial Research, New Delhi, 1986, 224.

Anonymous. Dictionary of Indian Medicinal Plants. Central Institute of Medicinal and Aromatic Plants, Lucknow, India, 1992, 416.

Gamble JS. Flora of the Presidency of Madras. The Authority of the secretary of state of Indian council, India 1921; 2:1344.

Silja VP, Varma KS, Mohanan KV. Ethnomedicinal plant knowledge of the MullaKuruma tribe of Wayanad district, Kerala. Indian Journal of Traditional Knowledge 2008; 7:604-612.

Gayathri V, Lekshmi P, Padmanabhan RN. Anti-Diabetes and Hypoglycaemic properties of *Hemigraphis colorata* in Rats. International Journal of Pharmacy and Pharmaceutical sciences 2012; 4(2): 224-328.

Bourdy G, Walter A. Maternity and medicinal plants in Vanuatu. The cycle of reproduction. *Journal of Ethnopharmacology* 1992; 37:179-196.

Yang DS, Pennisi SV, Son K, Kays SJ. Screening indoor plants for volatile organic pollutant removal efficiency. *Hort Science*, 2009; 44:1377-1381.

Anitha VT, Antonisamy JM, Jeeva S. Anti-bacterial studies on *Hemigraphis colorata* (Blume) H.G. Hallier and *Elephantopus scaber* L. *Asian Pacific Journal of Tropical Medicine*, 2012; 5: 52-57.

Akhil TT. And Prabhu P. *International Journal of Pharmaceutical Sciences and Research*. 2013; Vol. 4(9): 3477-3483.

Subramoniam A, Evans DA, Rajasekharan S, Nair GS. Effect of *Hemigraphis colorata* (Blume) H.G. Hallier leaf on wound

healing and inflammation in Mice. *Indian Journal of Pharmacology*, 2001; 33: 283-285.

Annapurna M, Kumar PTS, Lakshman LR, Lakshmanan VK, Nair SV, Jayakumar R. Biochemical properties of *Hemigraphis alternata* incorporated chitosan hydrogel scaffold. *Carbohydrate Polymers*, 2013; 92:1561-1565.

Deepak RP, Renjima V, Murugan K. Antioxidant Potential of *Hemigraphis colorata* (Blume) H.G. Hallier and *Rhinacanthus nasutus* (Linn). Kurz. – A Search. In *Proceedings of the 2007 Kerala Science Congress (03-40)*, Kannur, Kerala, 2007, 1-4.

Salim NA, Tajuddin RM. Effectiveness of local plants on sediment control for sustainable River Management. *UMTA* 2011; 36-42.

