



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1036005>Available online at: <http://www.iajps.com>**Review Article****EPIPHYLLUM OXYPETALUM HAW. : A LESSER KNOWN
MEDICINAL PLANT****Afzan Mahmud^{1,2*}, Maizatul Shima Shaharun¹, Bahruddin Saad¹ and Gouri Kumar Dash²**¹Department of Fundamental and Applied Sciences, Faculty of Science and Technology,
Universiti Teknologi PETRONAS, 32610 Seri Iskandar, Perak, Malaysia.²Faculty of Pharmacy and Health Sciences, Universiti Kuala Lumpur, Royal College of Medicine
Perak, 31350, Ipoh, Perak, Malaysia.**Abstract:**

Epiphyllum oxypetalum Haw. (Family-Cactaceae) is a unique plant with several traditional medicinal uses. The plant has been used to treat bloody phlegm and cough, uterine bleeding and shortness of breath. Previous reports on this plant has demonstrated significant pharmacological and biological effects such as anti-inflammatory, antioxidant and antimicrobial activities. Few phytochemical have been reported earlier by previous authors. Despite numerous medicinal attributes, the plant has not drawn much attention to the researchers. The current review compiles updated information collected from all possible scientific sources that would be helpful to the future investigators for pursuing further studies on the plant.

Keywords: *Epiphyllum oxypetalum* Haw. Traditional uses, Phytochemistry, Bioactivity**Corresponding Author:****Afzan binti Mahmud,***Department of Fundamental and Applied Science,**Universiti Teknologi PETRONAS,**32610, Seri Iskandar, Perak, Malaysia.***Tel:** 0060133253350 (Mobile)**Fax:** 00605-2536634**Email:** afzan_mahmad@yahoo.com, afzan@uninkl.edu.my

QR code



Please cite this article in press as Afzan binti Mahmud *et al* , *Epiphyllum oxypetalum haw. : A Lesser Known Medicinal Plant* , *Indo Am. J. P. Sci*, 2017; 4(10).

INTRODUCTION:

The use of plants for medicinal purposes dates back to earlier recorded human history. Traditional medicines chiefly containing medicinal plants have always played a vital role as important alternatives to conventional medicines in developing countries. The use of medicinal plants or their products is more popular especially among the poor communities that inhabit rural areas and lack access to health. Alternatively, there has been an enormous increase in the demand of medicinal plants across the globe for their chemical diversity and for the production of newer therapeutic moieties to control various diseases. In spite of tremendous advancement made in the discovery of new synthetic drugs, medicinal plants have still retained their therapy in the literature. Therefore, research on medicinal plants always remained a potential area of investigation.

E. oxypetalum Haw (Fig. 1), commonly known as "Bakawali" or "Bunga Raja" in Malaysia, is an important medicinal plant from the species of Cactus (family-Cactaceae), finds its application in the Malay traditional medicine. The plant is often cultivated as ornamental plant but also used by rural people for medicinal purposes.



Fig. 1. *E. oxypetalum* Haw [1]

BOTANY AND TAXONOMY

The family of Cactaceae comprises about 130 genera with some 1870 known species [2]. *Oxypetalum* is a Latin name derived with reference to the acute shape of the petals. The plant has received several other popular names such as Night-blooming cereus and Queen of the Night. The plant, though a cultivated species, grows well under full sun or light afternoon shade during dry months. The stems are erect, branched, sprawling or climbing, primary stems are cylindrical and flattened laterally. The plant blooms large white star-like flowers with lovely fragrances. The size of the flower is about 6 to 8 inches in diameter and the blooming takes place after sunset. The flowers stay open all night and close in the morning before sunrise. The flowers are produced from the flattened portions of the plant and can grow

up to 30 cm long, 12-17 cm wide [1]. The genus *Epiphyllum* is true cacti, but are often labeled as "epicacti" or "jungle cacti" to differentiate it from the related desert flora.

The taxonomic classification and nomenclature of the *E. oxypetalum* is shown in Table 1.

Table 1: Taxonomy of *Epiphyllum oxypetalum*

Kingdom	Plantae
Sub Kingdom	Tracheobionta
Superdivison	Spermatophyta
Divison	Magnoliophyta
Class	Magnoliopsida
Order	Caryophyllales
Family	Cactaceae
Genus	<i>Epiphyllum</i>
Species	<i>E.oxypetalum</i>
Binomial name	<i>Epiphyllum oxypetalum</i> Haworth

TRADITIONAL USES

E. oxypetalum has several traditional uses and forms an important ingredient in Malay traditional medicine. The plant is often used to treat bloody phlegm and cough, uterine bleeding and shortness of breath in old people. In addition, the constituents of *E. oxypetalum* are believed to have strong ability to stifle pain and are capable neutralizing blood clotting [3]. The stems are reported to cure cardiac affections and dropsy [1]. The Vietnamese used the petals of the faded blooms to make soups, which are believed to have tonic and aphrodisiac properties. Additionally, the flowers are used to treat wound abscesses for quick healing [1].

PHYTOCHEMISTRY

The present knowledge on phytochemistry of this species is still limited. Dandekar et al., [6] reported that the GC-MS analysis of the leaves revealed presence of the following compounds: ethanone, 1-(2-hydroxy-5-methylphenyl)-; 4-Hydroxy-2-methylacetophenone; Megastigmatrienone; Cycloocta-1,3,6-triene,2,3,5,5,8,8-hexamethyl; 2,5-Dihydroxy-4 isopropyl-2,4,6-cycloheptatrien-1-one; n-Hexadecanoic acid; 4-((1E)-3 Hydroxy-1-propenyl)-2-methoxyphenol ;Octadecanoic acid; Phytol; 6-octen-1-ol,3,7-dimethyl; Stigmasterol; Cholesta-22,24-dien-5-ol,4,4- dimethyl; 22-stigmasten-3-one, Allyldimethyl (prop-1-ynyl) silane; Sulfurous acid, cyclohexylmethyl hexyl ester; Heptacosane; Nonadecane, 2-methyl-; Hexadecane, 2,6,10,14- tetramethyl-; Octadecane, 2-methyl-; Eicosane, 2-methyl-; Spinasterone; 4,22-Stigmastadiene-3-one; Tetracosane; Hentriacontane; Stigmast-4-en-3-one and Testosterone cypionate respectively.

BIOACTIVITY**Anti-inflammatory activity**

Dandekar et al., [3] reported the anti-inflammatory activities of alcohol and aqueous extracts of the leaves of *E. oxypetalum*. The study was performed through both in vitro and in vivo models. The in vitro models included human red blood cell membrane stabilization and inhibition of protein denaturation methods. The in vivo anti-inflammatory activity was assessed on albino rats using carrageenan induced paw edema model. The extracts were tested at 200, 400 and 400 mg/kg, p.o. Aspirin (10 mg/kg, p.o.) was used as the standard drug for comparison of the activity. Results of the study revealed significant anti-inflammatory activity of the test extracts in a dose dependent manner with an observation that aqueous leaf extracts showed better activity than the alcohol extract.

Antioxidant activity

The aqueous and ethanol extracts of the dried leaves *E. oxypetalum* were evaluated for antioxidant activity by using hydrogen peroxide scavenging and DPPH assay to determine the free radical scavenging abilities of both the extracts. The results showed highest percentage of DPPH inhibition (60.37%) in the ethanol extract compared to aqueous extract that showed only 34.23%. The maximum percentage of inhibition in both the methods was observed at 2000 µg/ml for the ethanol extract and 500 µg/ml for the aqueous extract respectively [7].

Antimicrobial activity

The antimicrobial activity of petroleum ether, acetone and ethanol extracts of the leaves against *Staphylococcus aureus*, *Escherichia coli*, *Bacillus subtilis*, *Klebsiella pneumonia*, *Aspergillus terreus*, *Aspergillus oryzae*, *Rhizopus oryzae* and *Aspergillus niger* were reported at different concentrations of 25, 50, 75 and 100 mg/ml respectively using disc diffusion method [4]. The results of the study revealed promising antimicrobial activity against all tested organisms except the test fungi *A. terreus*, *A. niger* and *R. oryzae*. Preliminary phytochemical analysis of the extracts revealed the presence of phenolic compounds, glycosides saponins, steroids, terpenoids, tannins, and resins in the leaves.

In another study, Paralikar, 2014 [5] reported the antibacterial activities of silver nanoparticles biosynthesized from the aqueous leaf extract of *E. oxypetalum* against *Propionibacterium acne*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* respectively by disc diffusion method. The results of the study revealed significant bactericidal activity of

the synthesized AgNPs against test organisms. The efficiency of silver nanoparticles was further increased when accessed in combination with other antibiotics against test organisms.

CONCLUSION:

The leaves of *E. oxypetalum* contain various bioactive compounds, which are reflected from their diverse medicinal properties. However, the plant has not yet been attracted the attention of the researchers due to availability of little information in the literature. More attention is needed to explore the plant for other possible medicinal activities.

ACKNOWLEDGEMENT

This research is supported by Short Term Internal Research Fund (STIRF) from Universiti Teknologi Petronas (UTP)

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES:

1. Icha Purak. 2013. *Epiphyllum oxypetalum* (Brahmakamal): Orchid Cactus- An Interesting Plant, Indian Botanists. [ONLINE] Available at: <http://www.indianbotanists.com/2013/04/epiphyllum-oxypetalum-brahmakamal.html>. [Accessed 08 June 2017].
2. Nyffeler R and Egli U. Molecular phylogenetics and a revised suprageneric classification of the family Cactaceae. *Schumannia*, 2010; 6: 109-149.
3. Dandekar R, Fegade B, and Arvind N. Evaluation of anti inflammatory activity of alcohol and aqueous extract of *Epiphyllum oxypetalum* leaves. *World J of Pharm and Pharma Sci*, 2015; 4: 851-858.
4. Upendra RS and Khandelwal P. Assessment of nutritive values, phytochemical constituents and biotherapeutic of *Epiphyllum oxypetalum*. *Int J of Pharm and Pharma Sci*, 2012; 4(5): 421-425.
5. Paralikar P. Biogenic synthesis of silver nanoparticles using leaves extract of *Epiphyllum oxypetalum* and its antibacterial activity. *Austin J of Biotech and Bioeng*, 2014; 1(7): 1-5.
6. Dandekar R, Fegade B and Bhaskar VH. GC-MS analysis of phytoconstituents in alcohol extract of *Epiphyllum oxypetalum* leaves. *J of Pharmaco and Phyto*, 2015; 4(1): 149-154.
7. Dandekar R, Fegade B and Bhaskar VH. Antioxidant Evaluation of Free Radical Scavenging Activities of *Epiphyllum oxypetalum*. *World J of Pharm and Pharma Sci*, 2015; 4(9): 1301-1309.