

# Chemical analysis of *Blumea lacera* and Identification of its bioactive constituents by GC-MS technique

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## ABSTRACT

Plants are main sources of chemical constituents. A lot of organic, Inorganic, biomolecules have been isolated from the plants. Plants have effective value in different type of diseases in the plants and also animals. They are used as pesticides and insecticides. Indigenous plant plays an important role in biocontrol against the pesticides and insecticides. Destruction of stored grain or stored products by pest is a world wide problem. There are about more than two hundred insects which attack the store grain and its product. Scientists have been working to protect the insects by the indigenous plant extracts, therefore there is less effects on the users. The farmer uses the different type of extracts of plant to kill the insects like tobacco extracts, *Azadirachta extracts* (Neem) and some member of compositae like *Blumea* species. In the present paper we report the isolation and identification of bioactive constituents from the plants of *Blumea lacera*.

**Key words :** *Blumea lacera*, Compositae, Emery-2216, Diethyl oxalate.

## Introduction

Kukrondha in Hindi (*Blumea lacera*) is one of the most famous and popular plant in India. Taxonomically it lies in the kingdom Plantae, Subkingdom Tracheobionta (Vascular Plant), Superdivision Spermatophyta (Seed Plant), Division Magnoliophyta (Flowering Plant), class Magnoliopsida (Dicotyledous), Subclass Asteridae, order Asterales family Asteraceae (Compositae), Genus *Blumea* DC. (False Oxtongue). It is native plant of India, Nepal, Srilanka, Bangladesh, Myanmar, Thailand and Pakistan. It grows in the tropical and subtropical region and grows comfortably in the temperature range of 12°-34 °C. It cannot tolerate high to very high temperature, but it can survive temperature around  $\pm 4$  °C. In sheds, its leaf becomes highly fresh.

*Blumea lacera* competes with Rabi crop such as Lin seed, chickpea and wheat for light, food and moisture (Oudhia, 1997). The root kept in the mouth is said to cure disease of the mouth. In the Konkan region of India, the plant is used to drive away flea and other insects. It is prescribed as an anti scorbutic in West Africa (Caius, 1986).

1% leaf extract of Kukrondha also known as Shiyalmutra (*Blumea lacera*, Burm. F., D.C.) showed the lowest repellency 37.37% in case of lesser grain borer and 38.26% in rice weevil, while the repellency rate in 2% showed 48.72% in lesser grain borer and 44.52% in rice weevil. The highest repellency (55.71%) in lesser grain borer and (55.34%) in rice weevil was observed with 3% extract. The repellent action increased with the increase in concentrations of the leaf extract of Kukrondha (Roy *et al.*, 2005). Decoction of flowers treat bronchitis, leaf juice is

anthelmintic for haemorrhage and used as febrifuge, astringent, deobstruent and stimulant. It is also used in cuts and wounds (Ulubelen *et al.*, 1980).

The expressed juice of the leaves is useful anthelmintic, especially in cases of thread-worm, either internally or applied locally. The expressed juice of the leaves, mixed with black pepper, is given for bleeding piles. It is used also as a febrifuge and astringent (Kirtikar *et al.*, 2005). It is an invaluable remedy in Tinea Tarsi (Watt *et al.*, 1976).

The present study is a phytochemical approach to discuss the phytoactive components present in the *Blumea lacera*. Plant extract with respect to their medicinal values.

### Experimental

**Plant Material:** The *Blumea lacera* (Burm. F.) D.C. is a medicinal plant, describe in the present study was collected from the campus of world famous Botanical garden, M.S Bilgrami Botanical garden, University Department of Botany, Tilkamanjhi Bhagalpur University, District-Bhagalpur (Bihar) India and surrounding area of Mandar hill. This plant was brought to the laboratory in a loosely packed plastic bag. First Plant was taxonomically authenticated by the taxonomist in the University Department of Botany, Tilkamanjhi Bhagalpur University, Bhagalpur. The herbarium specimen has been deposited in department of chemistry of this university.

**Extraction and Isolation:** The plants were gathered and cleaned which involved screening, washing and

stripping leaves from stems. The unnecessary parts were removed prior to drying avoid wasting of time and energy. Once drying was completed, approx 5.00 kg of the plants (stem) was packaged in preparation for further processing. Dried plant materials tend to be hygroscopic so, these were stored under controlled humidity. It was then grinded to powder form by using a grinding machine in the laboratory of Post Graduate Department of Chemistry, Tilkamanjhi Bhagalpur University, Bhagalpur. Powdered plant 2.00 kg was extracted with 95% EtOH in Soxhlet extractor. 95% EtOH extract was concentrated under reduced pressure using rotary film evaporator (Harborne, 1976). After evaporation 22.7 gm extract (by weight) was isolated and this extract was kept for further chemical studies. This is my research work.

### Results and Discussion

From the 95% Ethyl Alcohol extracts of the plants (stem) of *Blumea lacera*, altogether two compounds were isolated. On the basis of Gas Chromatographic and mass spectroscopic studies (GC-Mass spectral data), these compounds were identified as EMERY-2216 and Diethyl oxalate.

These two compounds EMERY-2216 and Diethyl oxalate are new record from my research work. These compounds are authenticated by Gas Chromatography-Mass Spectroscopy techniques. The graph of GC-MS (Gas Chromatography-Mass Spectroscopy) is given here:

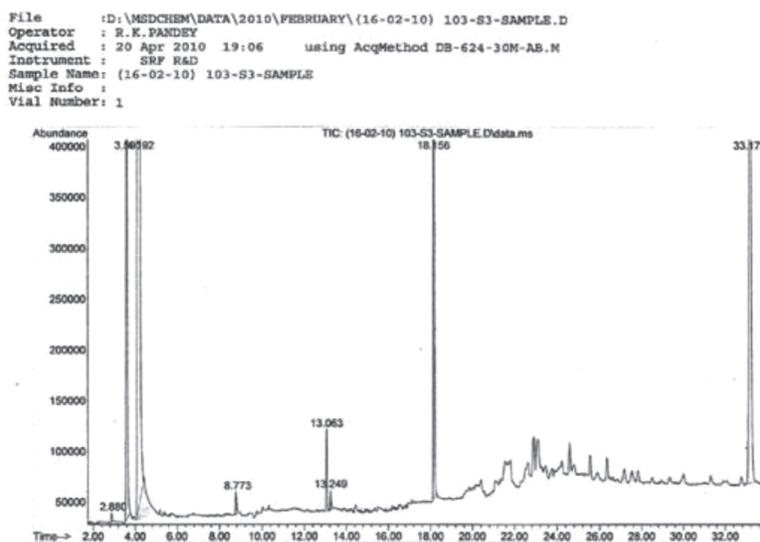


Fig. A

## Area Percent Report

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 Data File : (16-02-10) 103-S3-SAMPLE.D  
 Acq On : 20 Apr 2010 19:06  
 Operator : R.K.PANDEY  
 Sample : (16-02-10) 103-S3-SAMPLE  
 Misc :  
 ALS Vial : 1 Sample Multiplier: 1

Integration Parameters: autoint1.e  
 Integrator: ChemStation

Method : C:\msdchem\1\METHODS\DB-624-30M-AB.M  
 Title :

Signal : TIC: (16-02-10) 103-S3-SAMPLE.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	2.880	604	613	625	M2	9375	242889	0.03%	0.026%
2	3.590	750	769	807	BB	586941	22602116	2.61%	2.373%
3	4.192	870	901	944	BV	13874307	864344106	100.00%	90.758%
4	8.773	1893	1909	1931	M2	22255	769994	0.09%	0.081%
5	13.063	2835	2852	2871	M2	81029	2344701	0.27%	0.246%
6	13.249	2877	2893	2912	M3	19330	653532	0.08%	0.069%
7	18.156	3946	3971	4002	BB	750877	23285468	2.69%	2.445%
8	33.173	7230	7273	7326	BB 2	560043	38122222	4.41%	4.003%

Sum of corrected areas: 952365029

DB-624-30M-AB.M Tue Apr 20 21:53:31 2010

Fig. B

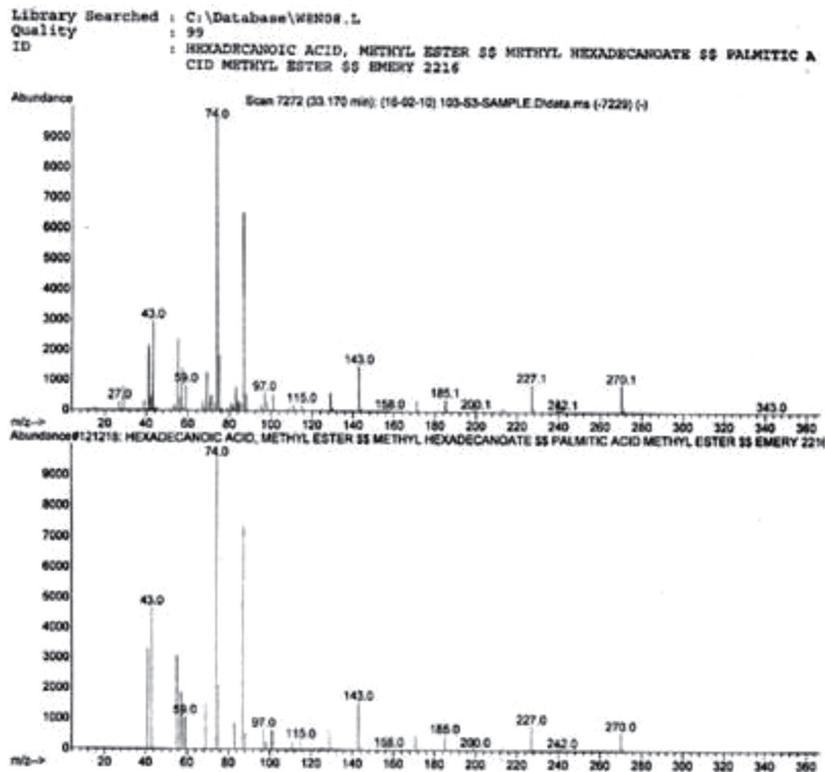


Fig. C

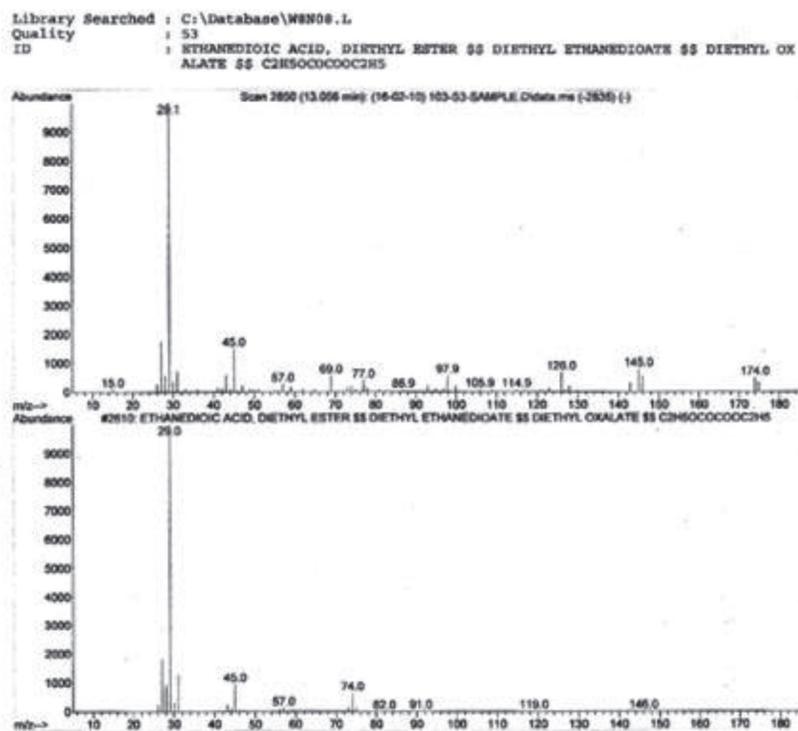


Fig. D.



Fig. E (EMERY-2216)

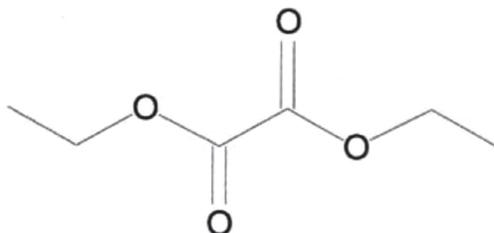


Fig. F. (Diethyl Oxalate)

## Conclusion

These two new compounds EMERY-2216 and Diethyl oxalate are new records.

Further work is going on in our laboratory to study more and more plants along with the study of medicinal value.

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