

PRELIMINARY PHYSICO-PHYTOCHEMICAL AND PHYTO-COGNOSTICAL EVALUATION OF THE LEAVES OF *AEGLE MARMELLOS*(L.)CORREA.

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ABSTRACT

Aegle marmelos (L.) Correa (Family- Rutaceae) and has great medicinal importance like fruit, root, leaf, bark are used as snake bite, wound healing. Fresh ripe pulp is used as mild laxative, tonic, good diuretic, also used to treat swollen joints, diarrhea, digestion, diabetic, trouble during pregnancy. Leaf decoction used to treat asthma, acute bronchitis, inflammation, jaundice, constipation, edema, high blood pressure, typhoid. In present study deals with the characterization of morphological features, fluorescence Analysis, determination of physical constant such as the total ash value, acid insoluble ash value and water soluble ash value were 6.05%, 2.45%, 1.20% respectively. Loss of weight drying was 12%, the foaming index < 100, the percent yield for methanol 12% and aqueous 3.60%.

Keywords: *Aegle marmelos* (L.) Correa, Rutaceae, Fluorescence, alkaloids, flavonoids.

INTRODUCTION

Since diseases have co-existed with life, the study of diseases and their treatment now a day's ethnobotany is important part of our ancient plant worldwide. This helps to getting increase knowledge of medicinal plants. Keeping this view a Preliminary physico-phytochemical and phyto-cognostical study of the leaves parts of *Aegle marmelos* (L.) Correa. (Family- Rutaceae) along with phytochemical study have done. It is commonly known as bael(Hindi), biva(Sanskrit), vivlam(tamil), Bengal quince, Indian quince, golden apple, holy fruit, stone apple, bela, stirphal, marcdoo, mapin(Thailand), phneou or pnoi(Cambodia), bau nau(Vietnam), bilak or maja pahit(malaya), modjo(java), oranger du Malabar(French), marmelos (Portuguese). It is a medium to large tree, stem and branches with light brown to green in colour. Strong spines are present on the branches. Fruits and leaves of the plant valued indigenous & traditional(Siddha, Ayurveda)system. It is found in all over India, from sub Himalayan forests, sub mountainous regions, Bengal, Andaman Island, Bangladesh,

Srilanka, and in Burma. It is also cultivated commonly throughout the country. *Aegle marmelos* (L.) Correa. leaves having anti-spermatogenic activity¹, act as hypoglycemic agent², also antifungal, anti diarrhea & anti bacterial activity³. It is used as dyspepsia, ulcers, dysentery, gastroenterocolitis⁴. Leaves parts of *Aegle marmelos* (L.) Correa used as anthelmintic, anti-microbial, analgesic, antipyretic, antidiabetic by tribal people. Standardization of herbal drugs are difficult because generally mixture of constituents and the active constituent in most cases is unknown. Now the present study deal the standardize leaves of *Aegle marmelos* (L.) Correa..

MATERIALS AND METHODS

Leaves parts of *Aegle marmelos* (L.) Correa were collected from fields of Madanpur, District of Mungeli, Chhatisgarh, India, in the month of 8th January and authenticated by Prof. N.K. Dubey, Botanist, Department of Botany Banaras Hindu University, Varanasi-221005, Uttar Pradesh, India. A voucher specimen has been preserved in Department of Pharmaceutical Chemistry, Natural

Product laboratory, Pharmacy college, Azamgarh, India for future reference (Voucher specimen no. MARCH 2013-17). The leaves parts were dried under shade and powdered (40 mesh size) and stored in airtight containers. The macroscopic characters were studied as per given procedure in WHO guidelines⁵

PHYSICO-CHEMICAL AND PHYTO-COGNOSTICAL STUDIES

The loss on drying^{6,7}, ash value (total ash, acid insoluble ash, water soluble ash)⁸, foaming index⁹, swelling index^{5,10}, fluorescence analysis¹¹⁻¹⁵, phytochemical screening¹⁶⁻¹⁸, microscopy¹⁹⁻²⁰, extractive value (petroleum ether, acetone, chloroform, methanol and water) were determined according to the official methods of Ayurvedic Pharmacopoeia of India.^{6,21-23}

EXTRACTION METHOD

The powdered plant material was extracted with petroleum ether (40-60°C), acetone, chloroform, methanol, aqueous respectively in a series using a maceration process. The extracts were concentrated to dryness in vacuum individually to get petroleum ether extract (PEAM), acetone (AEAM), chloroform extract (CEAM), methanol extract (MEAM), aqueous extract (AEAM) respectively. The yield of petroleum ether,

acetone, chloroform, methanol, aqueous extracts were 3.65, 3.00, 5.75, 12.00, 3.60% w/w respectively.

RESULT AND DISCUSSION

The macroscopical study of the leaves of *Aegle marmelos* (L.) Correa. was done. The leaves were light to deep green in colour trifoliate, alternate, oval pointed, shallowly toothed leaflets shape and slight bitter in taste (Table-1). The values of the physical constant like ash values, loss on drying, extractive value were determined. Extractive value and color of extract was investigated (Table-2). Preliminary qualitative phytochemical screening shown that presence of alkaloids, tannins, steroids, flavonoids and saponins (Table-3). Swelling index contain powdered drug 0.7 cm. Fluorescence nature of the powder drug & different solvent extracted drug with different chemicals was analyze using short light wavelength and longer light wavelength and the observation were reported in table no-4 & 5. The height of the foam in every test tube was less than 1cm, the foaming index were less than 100 (<100). (table-6). The TS of *Aegle marmelos* (L.) Correa leaf showed the upper and lower epidermis, midrib shown xylem, phloem arranged and powder microscopy showed calcium oxalate crystal,

Table 1: Macroscopical evaluation of *Aegle marmelos* (L.) Correa . leaves

S. No.	Feature	Observation
1	color	greenish
2	odour	characteristic
3	taste	slightly bitter
4	shape	trifoliate, alternate, oval pointed, shallowly toothed leaflets

Table 2: physicochemical analysis of *Aegle marmelos* (L.) Correa.leaves

S. No.	solvent	weight of plant material (gm)	percentage of yield(%)	colors of extract
1	pet. Ether	4	3.65%	Yellowish green
2	acetone	4	3.00%	Dark green
3	chloroform	4	5.75%	Dark green
4	methanol	4	12.00%	Dark green
5	aqueous	4	3.60%	Brown

Table 3: phytochemical screening of *Aegle marmelos* (L.) Correa.leaves

S. No.	Test	pet. ether extract	acetone extract	chloroform extract	methanol extract	aqueous extract
1.	Alkaloids	-	-	+	+	+
2.	Cardiac glycosides	-	-	-	+	-
3.	Tannins	-	-	-	+	-
4.	Steroids	-	-	-	+	-
5.	Flavonoids	+	+	+	+	+
6.	Saponins	-	-	-	-	+

(+) - present, (-) - absent

Table 4: Fluorescence Analysis of *Aegle marmelos* (L.) Correa.leaves Powder

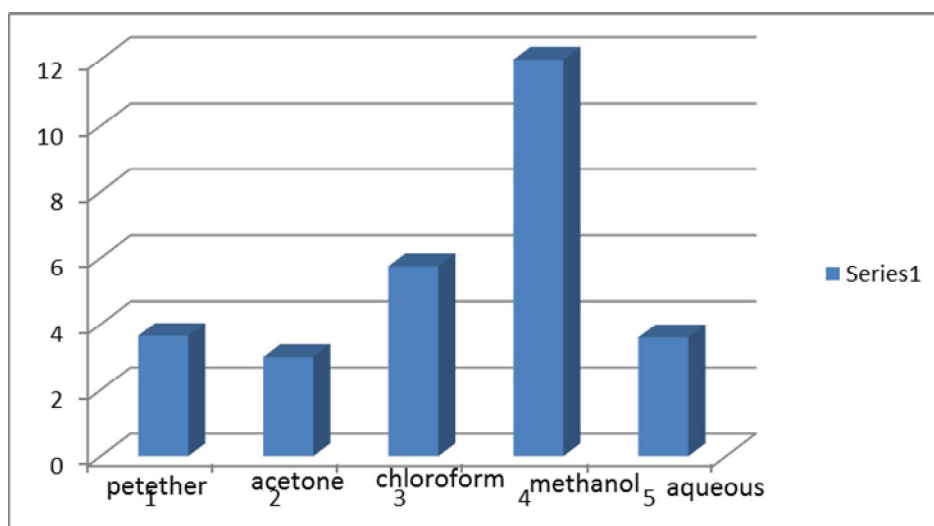
S. No.	Treatment	Normal light	U.V. light (Short length)	U.V. light (long length)
1.	Powder + dil HCL	Green	Green	Black
2.	Powder +con HCL	Green	Green	Black
3.	Powder +dil H2SO4	Green	Dark Green	Black
4.	Powder +con H2SO4	Green	Green	Black
5.	Powder + 10%KOH	Light Green	Green	Black
6.	Powder+ FeCl3	Green	Greenish black	Dark black
7.	Powder + dist H2O	Green	Dark Green	Black
8.	Powder + Ammonia	Green	Green	Black
9.	Powder + Iodine	Yellowish Brown	Black	Dark Black

Table 5: Fluorescence Analysis of *Aegle marmelos* (L.) Correa different.leaves Extract

S. No.	extract	Normal light	U.V. light (Short length)	U.V. light (long length)
1.	Pet. ether	Dark green	Yellowish green	Black
2.	Chloroform	Green	Green	Black
3.	Acetone	Yellow	Greenish Yellow	Black
4.	Methanol	Green	Yellowish Green	Black
5.	aqueous	Yellowish green	Yellowish Green	Black

Table 6: foaming index of *Aegle marmelos* (L.) different.leaves Extract

treatment	sample number of the test tube									
	1	2	3	4	5	6	7	8	9	10
dilutions(drug extract + water)	1:9	2:8	3:7	4:6	5:5	6:4	7:3	8:2	9:1	10:0
height of foam(cm)	0.1	0.2	0.4	0.3	0.4	0.3	0.2	0.2	0.3	0.5

**Fig: Extractive value (%) different extract of *Aegle marmelos* (L.) Correa.leaves**

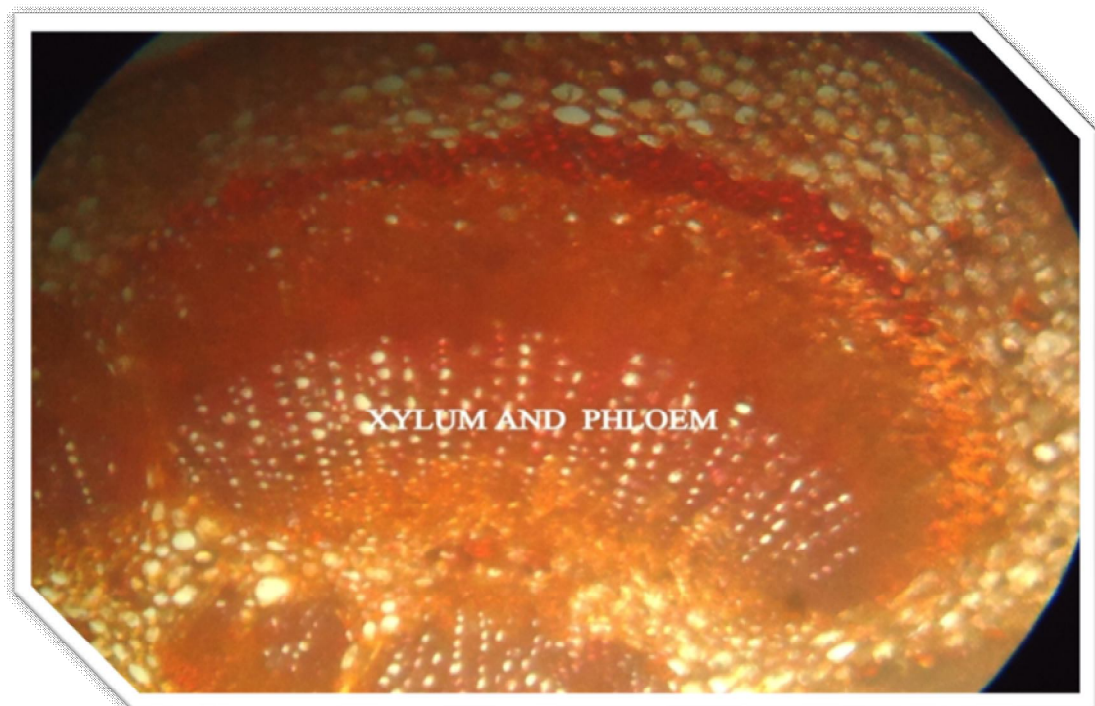
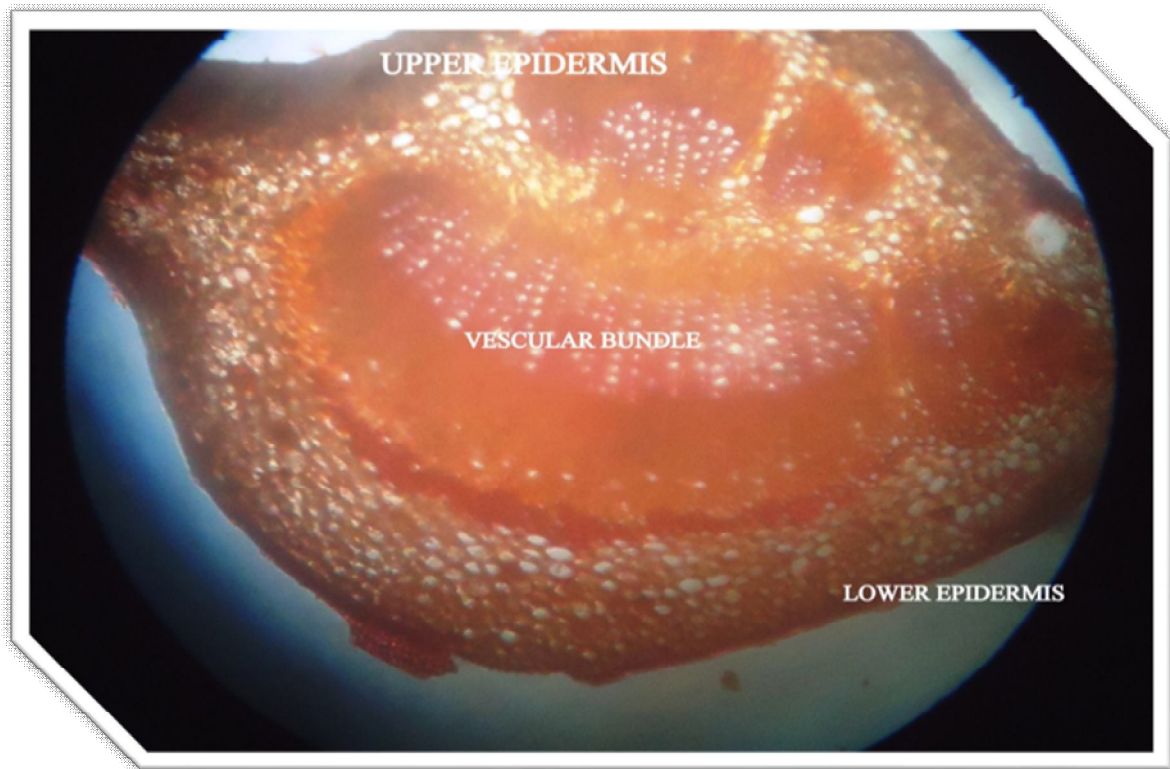


Fig: Microscopy of Aegle Marmelos (1) correa.leaves

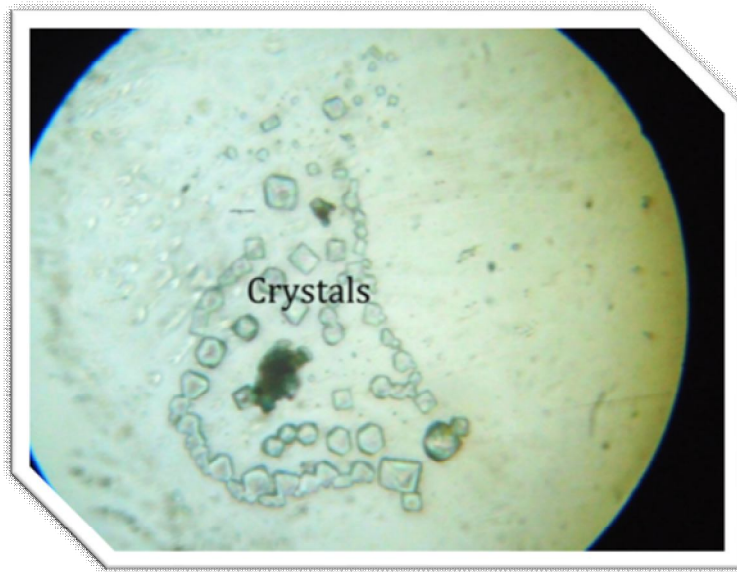


Fig.- Powder microscopy of *Aegle marmelos* L. leaves

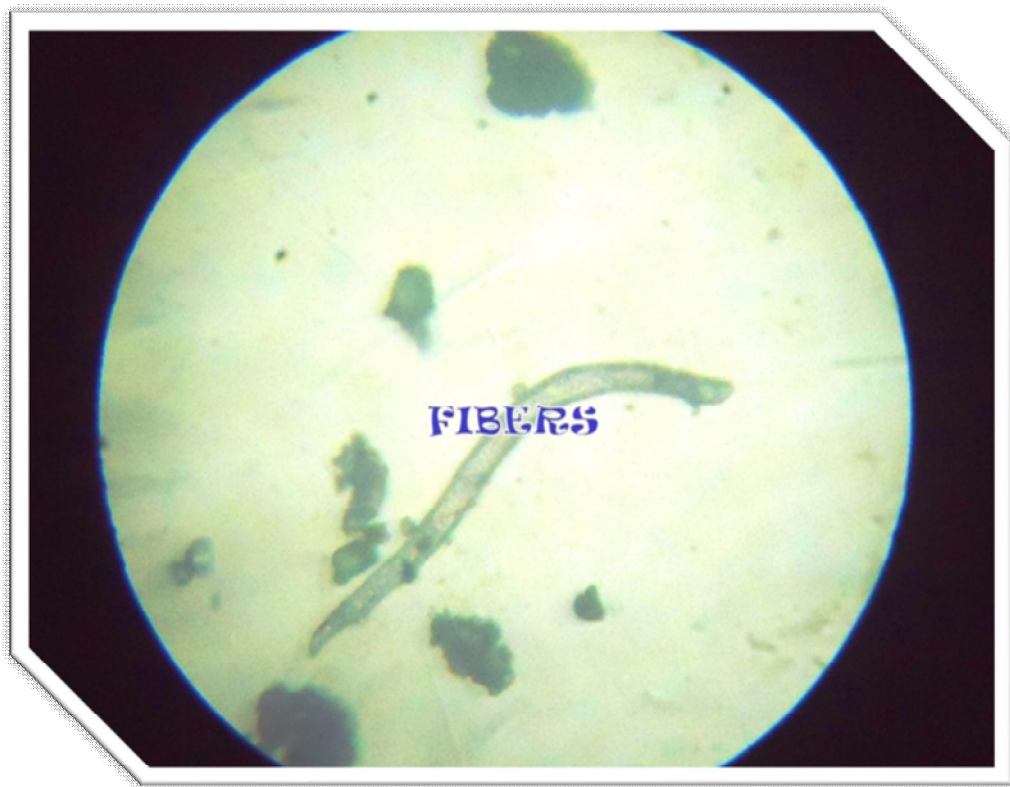


Fig.- Powder microscopy of *Aegle marmelos* L. leaves

CONCLUSION

Preliminary physico-phytochemical study of the *Aegle marmelos* (L.) Correa study concluded to macroscopic, other physical values and parameters will help to identify the species of plant, phytochemical screening will help the presence of compounds, Microscopy is an important tool in the evaluation of crude drugs which is applicable at various levels such as the authentication of the crude drugs, study of powdered drugs, study of T.S., Calcium oxalate crystals, starch grain etc. which is responsible for the medicinal importance of the plant. *Aegle marmelos* (L.) Correa. is known as wide range of medicinal value, it helps to identification, authentication and standardization. It also require to research on phytochemical and pharmacological aspect. However research going on it would be easier to develop new drugs.

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