

PHYSICOCHEMICAL AND QUANTITATIVE PHYTOCHEMICAL ANALYSIS OF SOME MEDICINAL PLANTS IN AND AROUND GADHINGLAJ

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Abstract: Phytochemical analysis was conducted on *Eucalyptus globulus* bark, *Acacia nilotica* bark, *Butea monosperma* bark, *Butea monosperma* flower, *Bombax malbaricum* flower, *Butea monosperma* pod & *Butea monosperma* leaves. The phytochemicals includes Tannin; Alkaloids & Flavonoids were determined quantitatively using literature method.

The Physicochemical analysis includes Total Ash (0.072 to 0.666), Water insoluble Ash (0.053 to 0.551), Water soluble Ash (0.019 to 0.170), Acid insoluble Ash (0.033 to 1.946) and Loss on drying (0.471 to 0.924) as per standard methods.

Quantitative phytochemical includes Alkaloids, Flavonoids and Tannin. *Eucalyptus globulus* Bark contain more amount of Tannin (5.47 mg/ 100 gm) whereas *Bombax malbaricum* Flower contain least (1.07 mg/ 100 gm). Flavonoids were highest in *Butea monosperma* flower (1.1259 mg/ 100 gm) & lowest in *Butea monosperma* bark (0.0180 mg/ 100 gm). Alkaloids were maximum in *Eucalyptus globulus* Bark (2.667mg/ 100 gm) whereas minimum in *Butea monosperma* pod contain least (0.099 mg/ 100 gm).

Keywords: Traditional Medicines, Physicochemical Analysis and Quantitative phytochemical Screening.

INTRODUCTION

Indian Traditional systems of medicinal mainly comprises of Ayurveda, Sidda and Unani Ayurveda is the oldest holistic management system with meticulously documented medicines and being practiced by a large population in India and abroad the development of this traditional system of medicines with perspectives of safety efficacy and quality will help not only to preserve the traditional heritage but also to rationalize the use of natural product in health care.

Nature has provided many things for humankind over the years, including the tools of the first attempts at therapeutic intervention. Ancient civilization depended on plant extracts

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for the treatment of various ailments. The medicinal value of plants lies in some chemical substances that produce a definite physiological action on the human body. The most important of these bioactive constituents of plants are alkaloids, tannin, flavonoids and Phenolic compounds (Okwu 1999, Hill 1952).

Today, plants material remains an important source for combating illness, including infectious diseases and many of these plants have been investigated for novel drugs or used as templates for the development of new therapeutic agents, food additives, agrochemicals and industrial chemicals (Charu et.al 2012, Habila et.al 2011). Keeping in the view the importance of phytochemical viz Flavonoids, Alkaloids, Tannin & Saponin. It was compulsory to provide their scientific data base line which may play a significant role in drug preparation.

Alkaloids play some metabolic role and control development in living system. It is used as Antioxidant, Anti inflammatory & reduces aerodigestive tract cancer risk in smokers (Bremner et al. 2010). Tannin have shown antiviral, antibacterial and anti parasitic effects, anti inflammatory and antiulcer activity (Lata et al.2010 & Souza et al.2011). The Flavonoids and phenolic compounds in plants have reported to exert multiple biological effects including antioxidant, free radical scavenging abilities, anti-inflammatory, anticarcinogenic (Asha et al. 2011).

Butea monosperma are used to dyeing color for fabric, as pesticides, as ailments, antifungal activity, antifertility activity (Sunil et al.2012). *Bombax malbaricum* possess antihelicobacter, antihelmitic, vermifuge, vermicide, antimicrobial and antioxidant activities (Hossain et al.). *Acacia nilotica* used in a number of medicinal properties such acute diarrhea, colds, bronchitis, bleeding piles and leucoderma (Deshpande et al. 2013). The oil of *Eucalyptus globulus* has therapeutic, perfumery, flavoring, antimicrobial and biopesticidal properties (Biljana et al. 2011).

Considering the important of all above plants, present study deals to determine Total Flavonoid, Total Alkaloids & Total Tannin from *Butea monosperma*, *Bombax malbaricum*, *Acacia nilotica* and *Eucalyptus globulus* quantitatively. The Physico-chemical parameters like Total Ash, Water soluble Ash, Water insoluble Ash, Acid soluble Ash & Loss on drying also were calculated.

MATERIAL AND METHODS

Collection of Plant material:

Four medicinal plants samples such as *Eucalyptus globulus*, *Acacia nilotica*, *Butea monosperma* and *Bombax malbaricum*. The plant sample of various medicinal plants was collected from Gadhinglaj Taluka of Kolhapur district. The plant samples were rinsed with tap water and then with deionized water. It was dried, chopped, crushed and powdered with electrical grinder and then the dried powder samples were stored in polyethene bottles for further processes.

Identification:

The sample was authenticated by Prof. R.S. Sawant, Department of Botany, Dr. Ghali College, Gadhinglaj, Kolhapur District.

QUANTITATIVE PHYTOCHEMICAL ANALYSIS

All the parts of plants were individually analyzed for the Total Alkaloids, Total Tannin and Total Flavonoids (Table 1) using standard methods (Obadoni et al. 2001, Boham et al. 1994 and Van-Burden et al. 1981).

PHYSICO-CHEMICAL ANALYSIS

Physicochemical analysis includes Total Ash, Water Insoluble Ash, Water Soluble Ash, Acid insoluble Ash and Loss on drying (Table 2) as per standard methods (Gupta et al. 1984, The Indian Pharmacopoeia et al. 1996, Ahmad and Sharma et al. 2001, Gupta et al. 2003 and Indrayan et al. 2005).

Table 1. Quantitative Phytochemical composition of plant samples on dry weight basis expressed as mg/100 gm dry weight

Sr.No	Name of the Plant	Part Used	Total Tannin	Total Alkaloids	Total Flavonoid
1	<i>Eucalyptus globulus</i>	Bark	5.47	2.667	0.8960
2	<i>Acacia nilotica</i>	Bark	2.51	0.224	0.7830
3	<i>Butea monosperma</i>	Bark	1.27	0.364	0.018
4	<i>Butea monosperma</i>	Flower	1.47	0.165	1.1259
5	<i>Bombax malbaricum</i>	Flower	1.07	0.124	0.2470
6	<i>Butea monosperma</i>	Pod	1.17	0.099	0.4960
7	<i>Butea monosperma</i>	Leaves	2.27	0.871	0.7532

Table 2. Physicochemical Analysis of various Medicinal Plants

Sr. No.	Name of the Plant	Part Used	Total Ash	Water insoluble Ash	Water soluble Ash	Acid insoluble Ash	Loss of drying
1	<i>Eucalyptus globulus</i>	Bark	0.072	0.053	0.019	0.033	0.471
2	<i>Acacia nilotica</i>	Bark	0.323	0.220	0.103	0.352	0.794
3	<i>Butea monosperma</i>	Flower	0.666	0.551	0.115	0.1	0.793
4	<i>Bombax malbaricum</i>	Flower	0.158	0.131	0.027	1.946	0.924
5	<i>Butea monosperma</i>	Pod	0.172	0.109	0.063	1.184	0.586
6	<i>Butea monosperma</i>	Leaves	0.450	0.290	0.160	1.819	0.59

RESULTS AND DISCUSSION

The results of physico-chemical analysis of various parts of medicinal plants are shown in Table 2. The Total amount of ash was highest for *Butea monosperma* flower (0.666) where as lowest for *Eucalyptus globulus* Bark (0.072). Water insoluble Ash was highest in *Butea monosperma* Flower (0.551) and lowest in *Eucalyptus globulus* Bark (0.053). Water soluble Ash were ranges from 0.019 to 0.160 maximum in *Butea monosperma* leaves. The acid insoluble Ash is highest in *Bombax malbaricum* Flower (1.946) and the lowest at *Eucalyptus globulus* Bark (0.033).

The phytochemical quantitative compositions of different medicinal plants are shown in Table 1. Alkaloids were observed in higher quantity in *E.globulus* Bark (2.667 mg/100gm) than the remaining while *Butea monosperma* pod (0.099 mg/100 gm) was found to contain the least amount of Alkaloids.

High quantity of flavonoids was detected in *Butea monosperma* flower (1.1259 mg/100 gm), while *Butea monosperma* bark had least flavonoid (0.0180 mg/100 gm). The tannin contents were detected to have high concentration in *E.globulus* Bark (5.47 mg/100gm) and less concentration in *Bombax malbaricum* Flower (1.07 mg/100gm).

CONCLUSIONS

All these plants may be a good source of minerals to treat number of diseases that are mainly caused due to the deficiency of those minerals and can be utilized in Ayurvedic system to cure disease.

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