



Evaluation of preliminary phytochemical on various medicinal plants

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ABSTRACT

The present study was carried out to evaluate the physical status and percentage yield of methanolic extract and its fractions of whole plant of *Leucas cephalotes*, leaves of *Hiptage benghalensis* and leaves of *Kydia calycina* were recorded for future references and Preliminary phytochemical screening of MLC, MHB and MKC revealed the presence of carbohydrates, glycosides, saponins, flavonoids, steroidal and phenolic compounds. MLC revealed the presence of all the above mentioned phytoconstituents except saponins and also MKC steroidal compounds. The fractions of MLC, MHB and MKC revealed the presence of glycosides, phenolic compounds, steroids and flavonoids.

Key Words: *Leucas cephalote*, *Hiptage benghalensis*, *Kydia calycina*.

INTRODUCTION

Leucas cephalotes (Roxb.ex Roth) Spreng. (Lamiaceae) (Kirtikar and Basu,1988). Distributed in India, Nepal, Pakistan and Afghanistan. In India it is distributed in Punjab, Bengal, Assam, Himalaya, Gujrat, all plains districts of Madras Presidency and an altitude of 1800 m in the Himalayas. The plants has a pungent taste with a flavour, heating, indigestible causes "Vata" and "Pitta", laxative, anthelmintic, stimulant and diaphoretic. And also useful in bronchitis, jaundice, inflammations, asthma, dyspepsia, paralysis, leucoma. The leaves also useful in fevers and urinary discharges (Ayurveda). The plant is stimulant and diaphoretic. The fresh juice in certain localities as an external application in scabies. The leaves, in combination with other drugs, are prescribed for scorpion-sting (Vagghata), but they are not an antidote to scorpion-venom. It is valuable homoeopathic drug and such is used for the treatment of chronic malaria and asthma (Ghosh, 1988). Dry leaves along with tobacco (1:3) are smoked to treat bleeding as well as itching piles (Khare, 2007).

Hiptage benghalensis(Linn) Kurz. (Malpighiace) (Chatterjee and Chandrapakrashi, 1994 ; Vaidyanam,1995). In India the plant is widely distributed in forest at an altitude of 1800 m, except in dry regions. And also found in moist habitats such as along riverbanks and in ravines. The plant occur in Sri Lanka, Andaman Islands, Bangladesh, and Myanmar (Burma) to Southern China. Leaves and vine are used in treatment of asthma, chronic rheumatism, skin diseases, and expressed juice applied externally in scabies. They are used in burning sensation, wounds, ulcers, leprosy, cardiac debility, rheumatism and hyperdipsia. In Ayurveda the leaves and barks are considered vulnerary, the leaves are highly regarded for treating skin diseases. The leaf juice possesses insecticidal properties and is used an external application for scabies. The plant is also used in the treatment of chronic rheumatism and asthma (Parrotta, 2001). *Kydia calycina* Roxb (Malvaceae) (John A. Parrott, 2001; Ramarao and Henry, 1996). The plant is distributed in tropical Himalayas from the Indus eastwards to Myanmar (Burma) and in peninsular India from northern Maharashtra and Southern Madhya Pradesh, chiefly in mixed, moist and

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deciduous forests. The leaves of *Kydia calycina* were 7.5-15 cm long and wide, usually 3-7 lobed, apex angled or rounded, base cordate, palmately 7-nerved, hoary-tomentose beneath; petioles 2.5-5 cm. Among the Santalis, a paste of the grounded leaves is applied to relieve body pains, arthritis and lumbago; a poultice of the leaves is traditionally used to treat skin diseases (Parrott, 2001).

MATERIALS AND METHODS

1.Plant material

The whole plant of *Leucas cephalotes* was collected in the month of July from Warangal and Leaves of *Hiptage benghalensis* and *Kydia calycina* were collected in the month of June Thirumala hills, at thirupathi, Andhra Pradesh, India. The selected plants were authenticated by Prof. Raju S. Vastavaya, Department of Botany, Kakatiya University, Warangal. And voucher specimens are being maintained in the herbarium of University College of Pharmaceutical Sciences, Kakatiya University, Warangal.

Preparation of Extracts

The whole plant of *Leucas cephalotes* (3kg), Leaves of *Hiptage benghalensis* (4kg) and *Kydia calycina* (3kg) were made free from the adherent foreign material and air-dried. Then they were coarsely powdered and 2kg of each was macerated with methanol in a round bottom flask for 7 days separately. The content of the flask were stirred intermittently to ensure the efficiency of the extraction. After a week, they were filtered and concentrated under reduced pressure to yield corresponding extracts, and the extracts were kept in a desiccator to remove moisture and stored properly until used.

The methanolic extracts of *L cephalotes*, *H benghalensis* and *K calycina* were dispersed in sufficient amount of distilled water separately and fractionated with toluene, ethyl acetate, butan-2-one and n-butyl alcohol in succession. The obtained fractions and the aqueous residues were concentrated under reduced pressure to yield corresponding extracts.

PRELIMINARY PHYTOCHEMICAL TESTS

Chemical tests were carried out to know the nature of compounds present in the methanolic extracts and their fractions of LC, HB and KC in order to identify the presence of various phytoconstituents present in them (Paech and Tracey, 1979).

Test for alkaloids

The extract was stirred with few ml of dilute Hydrochloric acid and filtered. The filtrate was tested with various alkaloidal reagents as follows:

Mayer's test

To a few ml of filtrate, 2-3 drops of Mayer's reagent was added along the sides of the test tube. A white or creamy precipitate indicates the presence of alkaloids.

Dragendorff's Test

To a few ml of filtrate, 2-3 drops of Dragendorff's reagent was added along the sides of the test tube. An Orange brown precipitate indicates the presence of alkaloids.

Wagner's test

To a few ml of filtrate, 2-3 drops of Wagner's reagent was added along the sides of the test tube. A reddish-brown precipitate indicates the presence of alkaloids.

Hager's test

To a few ml of filtrate, 2-3 drops of Hager's reagent was added along the sides of the test tube. A yellow precipitate indicates the presence of alkaloids.

Test for carbohydrates and their glycosides

Molish's test (General test for Carbohydrates and Glycosides): To 2-3ml of aqueous extract, few drops of 5% (w/v) alcoholic alpha-naphthol solution were added, mix well and cool the mixture. 1 ml of concentrated sulfuric acid was added along the sides of the tube, while cooling the tube in ice water. The a violet colour developed at the junction of the testub indicates the presence of Carbohydrates /glycosides.

Test for Saponins

(Foam test) Few ml of water was added to the extract and shaken vigoursly and set aside, the froth produced was observed after 15min. Formation of persistent foam indicates the presence of saponins.

Test for Coumarin glycosides

A small quantity of the extract was taken in a test tube and dissolved in few of methanol. This was made alkaline using aqueous NaOH. Blue or green fluorescence indicates the presence of coumarin glycosides.

Test for Flavonoids (Shinoda test)

A small quantity of the extract was taken in a test tube and dissolved in 1ml of methanol. A pinch of magnesium powder was added followed by the concentrated HCl. Appearance of pink colour indicates the presences of flavonoids, biflavonoids and their glycosides.

Ferric Chloride test

To a small quantity of the extract dissolved in methanol and few drop of neutral ferric chloride solution was added. If phenols and enols are present, it gives a green, blue, violet colour.

Test for steroids/ triterpenoids and their glycosides

Liebermann-Burchard Reaction

Few mg of extract was dissolved in chloroform. To this 1-2ml of chilled acetic anhydride was added and mixed well. Then 2-3 drops of chilled conc. H₂SO₄ was added along the sides of test tube, the color developed at the junction of the two liquids was observed. Steroids/triterpenoids gives a characteristic color (Red/ Pink/ violet).

RESULTS AND DISCUSSION

Table1: Percentage Yield And Physical Status Of The Methanolic Extracts And Their Fraction Of Leucas Cephalotes, Hiptage Bengalensis And Kydia Calycina

S.NO	EXTRACT/FRACTION	CODE	PHYSICAL STATUS	YIELD (%)
1	Methanolic extract of whole plant of Leucas cephalotes	MELC	Dark green semi-solid	7.5
2	Methanolic extract of Leaves plant of Hiptage benghalensis	MEHB	Dark green semi-solid	4.30
3	Methanolic extract of Leaves plant of Kydia calycina	MEKC	Dark green semi-solid	4.75
4	Toluene fraction of MELC	T-MELC	Greenish black semi-solid	15.4
5	Ethyl acetate fraction of MELC	EA-MELC	Brownish black semi-solid	11
6	Butanone fraction of MELC	BN-MELC	Brown semi-solid	5.5
7	n-Butyl alcohol fraction of MELC	BL-MELC	Brown semi-solid	4
8	Toluene fraction of MEHB	T-MEHB	Greenish black semi-solid	14.3
9	Ethyl acetate fraction of MEHB	EA-MEHB	Brownish black semi-solid	9.2
10	Butanone fraction of MEHB	BN-MEHB	Brown semi-solid	6.7
11	n-Butyl alcohol fraction of MEHB	BL-MEHB	Brown powder	3.5
12	Toluene fraction of MEKC	T-MEKC	Dark green semi-solid	14.8
13	Ethyl acetate fraction of MEKC	EA-MEKC	Greenish-Brown semisolid	8
14	Butanone fraction of MEKC	BN-MEKC	Greenish-Brown semisolid	6
15	n-Butyl alcohol fraction of MEKC	BL-MEKC	Greenish-Brown semisolid	5.3

Yield of extracts calculated with respect to the raw material used and for fraction was with respect to corresponding methanolic extract used for fractionation.

Preliminary phytochemical constituents identified with methanolic extract and their fractions of the selected plants Table 2.

TEST	Leucas cephalotes					Hiptage benghalensis					Kydia calycina				
	ME	TE	EA	BN	BL	ME	TE	EA	BN	BL	ME	TE	EA	BN	BL
Test for Carbohydrate/glycoside	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Test for coumarine	+	-	-	-	-	+	-	-	-	+	-	-	-	-	-
Test for saponins	-	-	-	-	-	+	+	-	+	-	+	-	-	-	+
Test for steriods	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-
Test for proteins& amino acids	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-
Test for phenolic compounds	+	+		+	+	-	+	+	-	-	+	+	+	+	+
Test for tannins	+	-	-	-	+	+	-	-	-	-	+	+	+	-	+
Test for flavanoids	+	-	+	-	-	+	-	+	-	-	+	-	+	-	-
Test for Alkaloids	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-

ME- Methanolic Extract; TE- Toluene fraction; EA- Ethyl acetate fraction; BN- Butanone fraction; BL- Butanol fraction.

The physical status and percentage yield of methanolic extract and its fractions of whole plant of *Leucas cephalotes*, leaves of *Hiptage benghalensis* and leaves of *Kydia calycina* were recorded for future references. The fractions obtained from these methanolic extracts were denoted as T-MELC, EA-MELC, BN-MELC, BL-MELC, T-MEHB, EA-MEHB, BN-MEHB, T-MEKC, EA-MEKC, BN-MEKC and BL-MEKC. Preliminary phytochemical screening of MLC, MHB and MKC revealed the presence of carbohydrates, glycosides, saponins,

flavonoids, steroidal and phenolic compounds. MLC revealed the presence of all the above mentioned phytoconstituents except saponins and also MKC steroidal compounds. The fractions of MLC, MHB and MKC revealed the presence of glycosides, phenolic compounds, steroids and flavonoids. Preliminary phytochemical screening of MLC, MHB, MKC and their fractions revealed the presence of carbohydrates, glycosides, alkaloids, steroids, saponins, phenolic compounds and flavonoids. Glycosides/steroids, phenolic compounds and flavonoids are present in majority of the fractions.

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