Research Article

www.ijrap.net

(ISSN Online:2229–3566, ISSN Print:2277–4343)

ANALYTICAL EVALUATION OF AN ETHNOMEDICINAL PLANT *BLUMEA LANCEOLARIA* (ROXB.) DRUCE: A PHARMACOGNOSTICAL, PHYTOCHEMICAL AND RASAPANCHAKA BASED STUDY

Jyoti Hajong [1]*, Rosy Gupta [2]

[1] PG Scholar, PG Department of Dravyaguna, Govt. Ayurvedic College, Patiala, Punjab, India

[2] Incharge and Reader, PG Department of Dravyaguna, Govt. Ayurvedic College, Patiala, Punjab, India

Received on: 28/1/26 Accepted on: 12/3/26

***Corresponding author**
E-mail: hajongjyoti1998@gmail.com

DOI: 10.7897/2277-4343.17260

ABSTRACT

Aim: The present study aimed to carry out a comprehensive analytical evaluation of *Blumea lanceolaria* (Roxb.) Druce, an ethnomedicinal and Anukta Dravya (extrapharmacopoeial) used by tribal communities of Northeast India, through pharmacognostical, physicochemical, phytochemical, and chromatographic investigations and to propose its Rasapanchaka. Methods: The whole plant of *Blumea lanceolaria* was collected from Meghalaya and authenticated by the BSI Shillong. Pharmacognostical evaluation included organoleptic, microscopic and powder microscopy studies. Physicochemical parameters, qualitative phytochemical screening was performed to detect secondary metabolites. HPTLC was carried out for fingerprint profile. Rasapanchaka assessment was attempted using the Taste Threshold Method and Virya assessment based on endothermic and exothermic reaction. Results: Physicochemical evaluation showed low moisture content (3.1%), total ash (16.71%), acid-insoluble ash (4.15%), higher water-soluble extractive (17.04%) than alcohol-soluble extractive (4.08%), and slightly acidic pH (4.52). Phytochemical screening indicated the presence of alkaloids, flavonoids, coumarins, tannins, carbohydrates and proteins. HPTLC fingerprinting displayed distinct spots with Rf values of 0.04, 0.19, 0.21, 0.30, 0.35, 0.48 and 0.62 at 254 nm. Taste threshold analysis revealed predominant Tikta, Katu, and Kashaya Rasa and an exothermic reaction suggested Ushna Virya. Discussion: The analytical findings support the traditional therapeutic claims of the plant and provide scientific parameters for authentication, quality control and standardization. Correlation between phytoconstituents and taste elements further strengthens the Ayurvedic interpretation. Conclusion: The study establishes pharmacognostical standards, phytochemical profile and HPTLC fingerprint of *Blumea lanceolaria* and proposes its Rasapanchaka. These findings provide a scientific basis for its future inclusion in Ayurvedic pharmacopeial literature after further pharmacological and clinical validation.

Keywords: *Blumea lanceolaria*, Anukta Dravya, Pharmacognosy, Ethnomedicinal, Extrapharmacopoeial, HPTLC, Rasapanchaka

INTRODUCTION

Ethnomedicinal plants are one of the major areas of new drug discovery in drug research, as these Anukta Dravya (extrapharmacopoeial plants) are data deficient in Ayurveda. Anukta Dravyas are those which are not described in 57 authoritative books of Ayurveda, mentioned in First Schedule under Drugs and Cosmetic Act, 1940. Detailed pharmacognostical evaluation provides valuable information regarding the morphology, microscopical and physicochemical characters of a crude drug. One such ethnomedicinal plant, *Blumea lanceolaria* belonging to Asteraceae family, is being used by tribals of Northeast India. It is a large perennial herb, upto 0.75-2 m in height and is distributed in Assam, Mizoram, Sikkim, West Bengal, Uttar Pradesh, Madhya Pradesh, Peninsular India like Maharashtra, Karnataka, Tamil Nadu, Kerala, Andaman and Nicobar Islands and countries of South East Asia, up to an altitude of 600 m.[1] In the survey study done by same author it was found that the tribal people employ its leaves and roots in the treatment of fever, cough, sore throat, dysentery, stomach-ache, headache, inflammatory conditions, wounds and joint disorders[2], but the plant's pharmacognostical characteristics and phytochemical constituents have not yet been scientifically assessed. The present study was therefore designed to undertake a detailed pharmacognostical, physicochemical, phytochemical, heavy metal, and HPTLC evaluation of *Blumea lanceolaria*. In Ayurveda properties of medicinal plants are presented in the name of Rasapanchaka. So, here an attempt has also been made to propose Rasapanchaka of this otherwise Anukta Dravya — Rasa (Taste), Guna (Properties), Virya (Potency), Vipaka (End product of metabolism) and Prabhava (Specific action)[3]—by classical (based on ethnomedicinal usage) and modern techniques (experimental observations).[4] Such an integrated approach not only will help in standardizing the drug but also facilitate its rational inclusion in Ayurvedic therapeutics and future pharmacopoeial monographs.

MATERIALS AND METHODS

Sample Collection

The whole plant of *Blumea lanceolaria* (Roxb.) Druce was collected from its natural habitat Tikrikila, Meghalaya, authenticated by BSI, Shillong, Meghalaya with a letter no. BSI/ERC/Tech/2023-24/264 and used for the present study. As leaves are generally used by the tribals, therefore, mainly the leaves were studied for physicochemical, phytochemical and HPTLC analysis.

Place of Study

Morphological and microscopic studies were carried out in the Pharmacognosy Laboratory, PG Department of Dravyaguna, Government Ayurvedic College, Patiala. Physicochemical analysis and Phytochemical screening were conducted at the Government Drug Testing Laboratory (ASU), Patiala. HPTLC was carried out at the Herbal Health Research Consortium, Amritsar, Punjab, India.

Phylogenetic classification of *Blumea lanceolaria* (Roxb.) Druce
Clade– Angiosperms
Super order– Asteranae
Order– Asterales
Family– Compositae (Asteraceae)
Genus– *Blumea*
Species– *lanceolaria* [5]

Local Vernacular Names
Jwglaori (Boro Tribes of Meghalaya and Assam),
Mukumgere (Dimasa Tribes of Assam),
Veishak (Chakma Tribes of Mizoram),
Buarze and Terapaibi (Mizo Tribes of Mizoram) [2]

Plant Description
Blumea lanceolaria is an aromatic, perennial subshrub reaching a height of approximately 2 meters, unbranched, with branched inflorescences. Leaves are simple, oblanceolate to elliptic, measuring 5–35 cm in length and 0.5–5 cm in width, with serrated or dentate margins. The upper surface of the leaf is dark green and glabrous, while the lower surface is light green and pubescent, with prominently visible veins (Figures 1 and 2). The root system is a well-developed taproot, thick, cylindrical, tortuous and light brown in colour, emitting a characteristic aromatic odour (Figure 3). The stem is erect, cylindrical, semi-woody to woody in mature plants (Figure 4) and aromatic upon crushing. Flowers are borne in small yellow capitula arranged in terminal or axillary clusters, and the fruit is a small dry cypsela (Figures 5 - 8). [6,7]

OBSERVATIONS AND RESULTS

Pharmacognostical Study

Organoleptic study
Dried sample of leaves, stem and root were evaluated for their various characters like colour, texture, odour, taste and fracture, using Panchendriya Pariksha (examination through five sense organs). The leaves were 9- 10 cm in length, oblanceolate to elliptic in shape with serrated margin and dark green surface, possessing Tikta (bitter), Katu (pungent) taste and a strong aromatic odour. Stem was 0.5 cm in diameter, corky, aromatic and had fibrous fracture. Root was light brown, tortuous and aromatic.

Microscopic Study
Transverse sections of midrib of the leaf, root and stem of the plant were taken and stained with safranin. Then they were observed under binocular microscope at 5X, 10X and 45X.

T.S of the leaf showed the midrib convexly protruding at the lower side and ridged on the upper side with collenchymatous tissue. Detailed T.S showed upper and lower epidermis, with palisade and spongy parenchyma cells below it. The simple trichomes were 2 to 8 celled, uniseriate, thick-walled. Collenchymatous tissue was seen under both the epidermis of the midrib. Centrally located vascular tissue arranged in 'V' shape was encircled by a parenchymatous sheath. (Figure 9)

The detailed T.S. of stem showed a layer of epidermis with simple trichomes. The latter were non- lignified, 3-12 celled, uniseriate, thick walled. A narrow collenchymatous hypodermis was seen underneath the epidermis, followed by a parenchymatous cortex. Distinct endodermis with pericycle underneath it capped over the discontinuous ring of vascular strand. Vascular strand consisted of radially arranged xylem vessels and narrow phloem. Pith consisting of parenchymatous cells was disintegrated at places. (Figure 10)

Detailed microscopic T.S. section of root showed the outermost layer of cork cells **(**1-2 rows) often getting obliterated at places. Root hairs followed by 4 to 6 rows of parenchymatous cortex and distinct endodermis. Underneath of this was a narrow zone of pericycle characterized by a row of oil cells. Phloem, traversed with two small groups of fibres lying towards the inner zone, being very large conical patches with their broad base embedded in the innermost region of the phloem and reaching almost upto the region of pericycle, xylem consisted of isolated or groups of xylem vessels. (Figure 11)

Powder microscopy
At 45X, the powdered material of leaves showed fragments of wavy epidermal cells; fragments of isolated fibres, scalariform vessels, thickened annular vessels, spiral vessels and stomata. Trichomes consisting of simple unicellular and multicellular cells; oil cells and crystals of calcium oxalate were also observed. (Figure 12)

Physicochemical Study
As per the standard monographs available for herbal drugs in API[8], leaves powder was subjected to physicochemical evaluation at DTL, Patiala, Punjab. Results showed low moisture content (3.1%), indicating good shelf life. Total ash value came out to be 16.71% and acid-insoluble ash as 4.15%. Water-soluble extractive value (17.04%) was higher than alcohol-soluble extractive (4.08%), indicating the predominance of water-soluble constituents. The pH (4.52) suggested acidic nature of the drug.

Phytochemical Screening
Qualitative phytochemical analysis of leaf powder was carried out as per the reference standards (mentioned as citation) revealed the presence of the following:

Results of qualitative assay of powder of leaves of *Blumea lanceolaria* (Roxb.) Druce (Figure 13)

SN	Qualitative Assay			Results
1.	Alkaloids[9]		i. Dragendorff's test.	Positive(+)
			ii. Mayer's test	Positive(+)
2.	Glycosides	Flavonoids[10,11]	Alkaline Reagent Test	Positive (+)
			Ammonia test	Negative(-)
			Shinoda test	Negative(-)
		Coumarin[10]	$FeCl_3$ test	Positive(+)
		Saponin[12]	Foam test	Negative(-)
		Cardiac glycosides[13]	Keller Kiliani test	Negative(-)
3.	Steroids and triterpenoids[11]		Salkowski test	Negative(-)
4.	Resins		Acetone test	Negative(-)
5.	Tannins (Ferric test)[12]		$FeCl_3$ test	Positive(+)
6.	Carbohydrates[9]		Molisch's test	Positive(+)
			Benedict	Positive(+)

		Fehling's solution test	Negative(-)
		Iodine test	Negative(-)
7.	Proteins[12]	Ninhydrin test	Negative(-)
		Millon's test	Positive(+)

HPTLC Fingerprinting

Method used at Herbal Health Research Consortium, Amritsar

HPTLC analysis of 10 µl of conc. methanolic leaf extract of *Blumea lancoelaria* was performed on pre-coated HPTLC silica gel 60 F_{254} plate of 3x10 cm. The plate was activated by heating at 110°C for 10–15 minutes to remove moisture. Then with the help of an automatic sample applicator CAMAG Linomat 5, the drug sample was applied as narrow band on the plate at 15 mm position. The plate was placed vertically in a development chamber having methanol as solvent (up to 8 mm) and saturated with mobile phase vapour which was maintained at constant temperature (25°C) and humidity for 20 mins. Sample band was ensured to be above solvent level. The mobile phase moved up by capillary action. After 20 mins plate was removed from chamber and was dried. The developed spots were visualised under UV light 254 nm by an automated densitometer CAMAG TLC scanner after spraying with an inert gas. [14]

Result

Methanolic leaf extract of *Blumea lanceolaria* (Roxb.) Druce revealed distinct spots with Rf values of 0.04, 0.19, 0.21, 0.30, 0.35, 0.48, and 0.62 under UV light at 254 nm. This fingerprint profile can serve as a reference for quality control and standardization of *B. lanceolaria*. (Figures 14-17)

Proposed Rasapanchaka

Rasapanchaka is most crucial for the extrapharmacopoeial drugs because no classical descriptions of Rasa (taste), Guna (properties), Veerya (potency), Vipaka (end product of metabolism) and Prabhava (specific action) are available for them. As per the classical reference, the Gunas (qualities) residing in the substances are inferred through their Karmas (actions).[15] Therefore, we can evaluate these properties through ethnomedicinal uses and clinical observations. The survey study carried out by the same author has revealed its antipyretic, analgesic action and its uses in fever, cough, sore throat, dysentery, stomach-ache and headache.[2] Thus, based on ethnomedicinal uses, pharmacognostical observations, phytochemical profile, taste threshold evaluation and exothermic and endothermic reaction, Rasapanchaka of *Blumea lanceolaria* are proposed as follows:

Rasa (Taste) evaluation

For the evaluation of *Rasa,* the Taste Threshold Method described by Dr Shiva Charan Dhyani[16] was adopted and the study was done at the Pharmacognosy Lab. GAC, Patiala, to know taste of *Blumea lanceolaria*.

Taste Threshold is a method where a minimum concentration of *Rasa* present in a substance is detected by the tongue. Various ways like Cold water method, Hot water method, and 6 hours after boiling were performed. (Figure 18)

Group I- Cold water method

One gram of the sample drug powder was mixed with 20 ml of distilled water, stirred for 30 minutes, allowed to settle, and then filtered. From the filtrate, 1 ml was diluted with distilled water to prepare serial dilutions (1:5, 1:10, 1:20, 1:30, etc.). A few drops of each dilution were placed on the tongue of 14 volunteers, who were instructed to retain the solution for at least 30 seconds. The highest dilution at which the taste was last perceived was recorded as the taste threshold.

Group II- Hot water method

Two gram of the sample drug powder was boiled with 40 ml of distilled water until reduced to 20 ml, with continuous stirring. After cooling, half of the solution was filtered. Serial dilutions were prepared and taste perception was assessed in the same manner as Group I using 12 volunteers. The taste threshold was recorded.

Group III- Six-hour post boiling method

The remaining solution from Group II was allowed to stand for 6 hours after boiling, then filtered. Serial dilutions were prepared, and taste threshold was determined using the same procedure as Group I in a third group of 11 volunteers.

Result of Taste Threshold Method

Group	No. of participants	Max. dilution perceived	Tikta	Katu	Kasaya
I	14	1: 100	+++	+	++
II	12	1: 160	+++	++	+
III	11	1: 140	+++	++	+

Group I: Cold water method; Group II: Hot water method; Group III: 6 hours after boiling

Relation between Rasa and Phytoconstituents detected in *B. lanceolaria*

Rasa (Taste)	Phytoconstituents found
Tikta (Bitter)	Alkaloids, flavonoids
Katu (Pungent)	Essential oils, alkaloids, flavonoids
Kasaya (Astringent)	Tannins

This taste elements correspond to the phytoconstituents found present in phytochemical analysis.

Assessment of Virya by laboratory experiment method

According to Prof. S.C. Dhyani, Virya of a Dravya (drugs) can be assessed *in vitro* based on exothermic and endothermic reaction in the distilled water.[17]

Methods: 50 ml of distilled water was taken in a beaker, and its initial temperature (32.2°C) was recorded. About 5 g of *Blumea lanceolaria* leaf powder was added and mixed thoroughly. The temperature of the mixture was measured immediately and after 2, 4, and 6 minutes using a digital thermometer. A marginal rise of 0.1°C was observed immediately after addition (32.3°C), which remained constant up to 4 minutes, and returned to 32.2°C after 6 minutes.

This indicated exothermic reaction, thus establishing its Ushna Virya. (Figure 19)

Based on the above criteria following Rasapanchaka are proposed for *B. lanceolaria*
Rasa: Tikta, Katu and Kasaya
Guna: Laghu, Ruksha
Virya: Ushna
Vipaka: Katu
Doshkarma: pacifies Kapha and Vata while aggravating Pitta.

Other elements of Rasapanchaka of *B. lanceolaria* on the basis of reported Ethnomedicinal actions and uses

Reported actions and uses	**Proposed elements of Rasapanchaka**				
Prayoga (Ethnomedicinal uses for)	**Karma (Actions)**	**Doshkarma, Agnikarma (Action on Dosha and Agni)**	**Guna (Properties)**	**Virya (Potency)**	**Vipaka (End product of metabolism)**
Jwara (pyrexia)	Aampachana Jwarahara (Antipyretic)	Agnivardhaka, Pittavardhaka	Laghu	Ushna	Katu
Kasa (Cough, bronchitis, sore throat)	Kasahara	Kaphashamaka	Laghu, Ruksha	Ushna	Katu
Swasha (Asthma)	Swashahara	Kaphashamaka	Laghu, Ruksha	Ushna	Katu
Sandhishoth (Arthritis, inflammation of joints)	Sothahara (Anti-inflammatory)	Kaphashamaka	Laghu, Ruksha	Ushna	Katu
Sandhishula (Arthralgia)	Vedanahara (Analgesic)	Vatashamana	Ushna	Ushna	Katu
Pravahika (Dysentery)	Ushna grahi	Agnivardhaka Kaphashoshak	Laghu, Ruksha	Ushna	Katu
Ajirna (Indigestion)	Deepana	Pittavardhaka	Laghu, Ruksha	Ushna	Katu
Udarashula (Abdominal discomfort), Shirashula (Headache)	Shulaprashaman (Antispasmodic, analgesic)	Vatashamaka	Ushna	Ushna	Katu
Vrana (Wound)	Vranaropaka (Wound healing)	Kaphashamaka	Laghu, Ruksha	Ushna	Katu
Adverse effect*	Raktasravakara (Haemolytic)	Pittavardhaka	Ushna	Ushna	Katu
Mukha Dourgandhya	Durgandhahara (Flavouring agent)				

* Adverse effect reported- In high dose it causes haemolysis due to Saponins.[1]

Figure 1: *Blumea lanceolaria* leaf (Dorsal surface)

Figure 2: *Blumea lanceolaria* leaf (Ventral surface)

Figure 3: Root of *Blumea lanceolaria*

Figure 4: Stem of *Blumea lanceolaria*

Figure 5: Inflorescence

Figure 6: Fully bloomed and dried inflorescence

Figure 7: A flower head

Figure 8: Longitudinal section of flower head

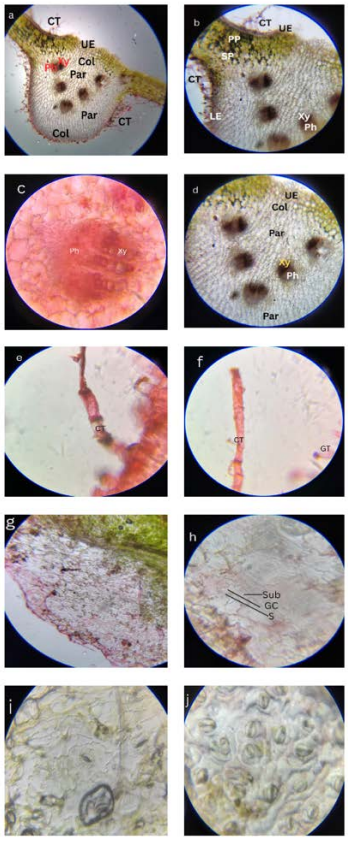

Figure 9: Microscopic characters of *Blumea lanceolaria* (Roxb.) Druce. leaves

(a)T.S of mid rib of leaf (magnification 5X), (b)T.S of mid rib of leaf (magnification 10X),(c) T.S of mid rib of leaf (magnification 45X), (d) T.S of mid rib of leaf (magnification 45X), (e) and (f) Covering trichome (magnification 45X), (g) Anisocytic stomata observed from the surface of lamina (magnification 10X), (h) and (i) Opened stomata (magnification 45X), (j) Closed stomata(magnification 45X); UE- Upper epidermis, LE- lower epidermis, Col- Collenchyma, Par- Parenchyma, PP- Palisade parenchyma, SP- Spongy parenchyma, CT- Covering trichomes, Xy- Xylem, Ph- Phloem, Sub- Subsidiary cell, GC- Guard cell, S- Stomata.

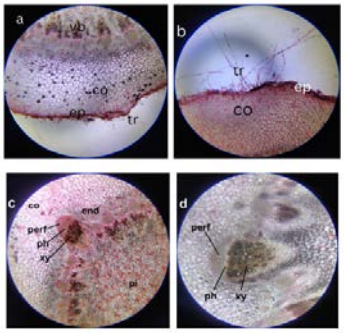

Figure 10: Microscopic characters of *Blumea lanceolaria* (Roxb.) Druce. stem

(a), (b) and (c) T.S of stem (magnification 10X), (d) T.S of stem (magnification 45X); co- cortex, tr- trichome, vb- vascular bundle, ep- epidermis, end- endodermis, perf- pericycle fibre, ph- phloem, xy- xylem, pi- pith.

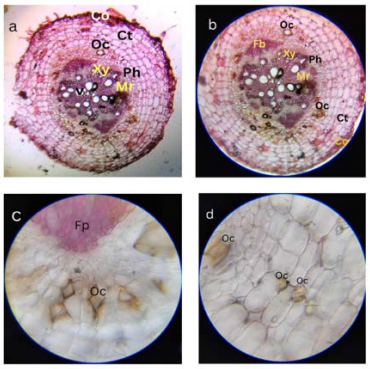

Figure 11: Microscopic characters of *Blumea lanceolaria* (Roxb.) Druce. root

(a) T.S. of root at 5X, (b) T. S. of root at 10X, (c) and (d) T.S of root at 45X; Co- Cork, Ct- Cortex, Oc- Oil cell, Xy- Xylem, Ph-Phloem, Mr- Medullary ray, v- Vacuole, Fp- Fibre projection.

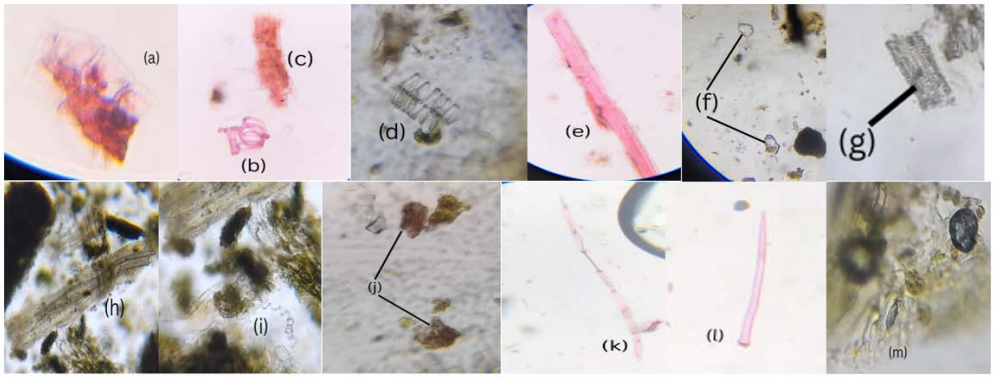

Figure 12: Microscopic characters of *Blumea lanceolaria* (Roxb.) Druce. leaves powder.
a) Fragment of epidermal cell (magnification 10x), (b) and (d) xylem vessel (annular spiral) (magnification 10x), (c) and (e) fragment of fibre (magnification 10x), (f) calcium oxalate crystal (magnification 10x), (g) fragment of scalariform vessel (magnification 10x), (h) fragment of annular vessel(magnification 10x), (i) fragment of spiral vessel (magnification 10x), (j) oil cells (magnification 10x), (k) multicellular trichome (magnification 10x), (l) unicellular trichome (magnification 10x), (m) fragment of stomata.

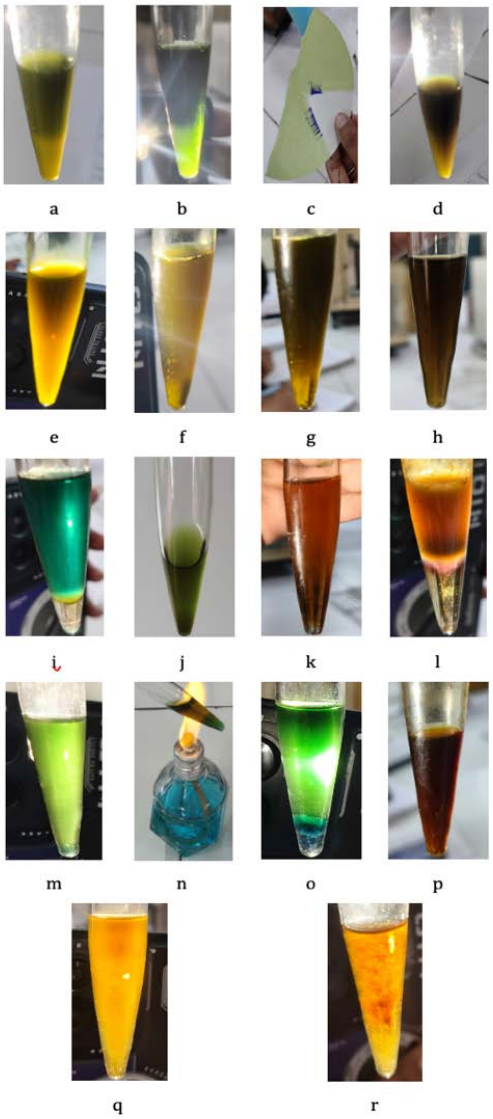

Figure 13: Phytochemical analysis of leaves of *Blumea lanceolaria*
(a) Dragendorff's test and (b) Mayer's test for Alkaloids; (c) Ammonia test and (d) Shinoda test for Flavonoids glycosides; (e) Before and (f) after addition of HNO_3 to $FeCl_3$ test for Coumarin glycosides; (g) Foam test for Saponin glycosides; (h) Keller Kiliani test for Cardiac glycosides; (i) Salkowaski test for Steroids and triterpenoids; (j) Acetone test for Resins; (k) $FeCl_3$ test for tannin; (l) Molisch's test, (m) Benedict test, (n) and (o) Before and after heating of Fehling's solution test, (p) Iodine test for Carbohydrates; (q) Ninhydrin test, (r) Millon's test for Proteins.

Figure 14: HPTLC of *Blumea lanceolaria* (Roxb.) Druce Churna (powder) at UV short wave 254nm

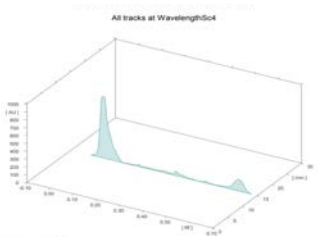

Figure 15: Chromatogram of *Blumea lanceolaria* (Roxb.) Druce Churna at UV short wave 254nm

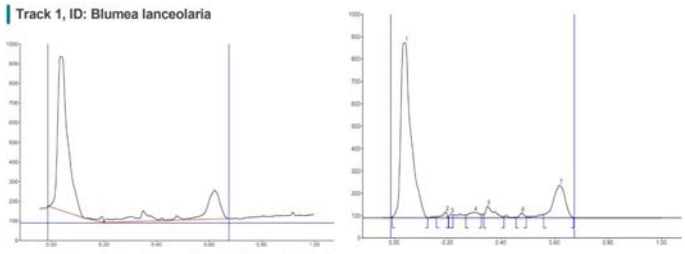

Figure 16: HPTLC finger printing of *Blumea lanceolaria* (Roxb.) Druce Churna at UV short wave 254nm

Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %	Assigned substance
1	-0.01	4.3	0.04	783.4	72.92	0.13	1.0	23443.6	74.70	unknown *
2	0.16	3.4	0.19	27.5	2.56	0.20	5.0	360.4	1.15	unknown *
3	0.20	10.0	0.21	17.1	1.60	0.22	12.4	174.6	0.56	unknown *
4	0.27	13.6	0.30	25.0	2.33	0.33	15.4	799.8	2.55	unknown *
5	0.34	14.6	0.35	52.7	4.91	0.41	5.2	1250.0	3.98	unknown *
6	0.46	2.2	0.48	22.0	2.05	0.50	5.3	301.9	0.96	unknown *
7	0.56	14.7	0.62	146.6	13.65	0.67	1.4	5051.4	16.10	unknown *

Figure 17: HPTLC finger printing of *Blumea lanceolaria* (Roxb.) Druce Churna at UV short wave 254 nm.

Figure 18: Preparation of extracts and dilutions for Taste Threshold test.

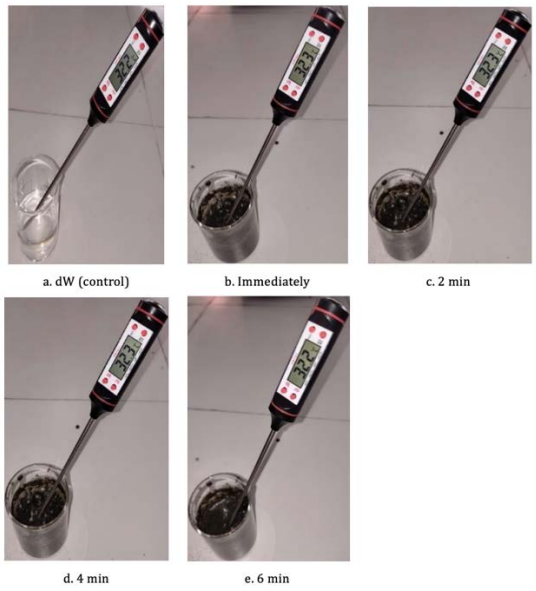

Figure 19: Results of exothermic and endothermic reaction for Virya analysis

DISCUSSION

In this present article, *Blumea lanceolaria* (Roxb.) Druce, a folklore medicinal plant widely used by tribal communities of Northeast India, was subjected to an analytical evaluation. Although the plant is extensively employed in conditions such as fever, cough, dysentery, inflammatory disorders, wounds and joint pain, there has been a research gap of systematic scientific documentation regarding its pharmacognostical and phytochemical profile. The current study addresses this gap and provides baseline data for its authentication and standardization.

Macroscopic and organoleptic characters such as aromatic odour, Katu, Tikta and Kasaya in taste, oblanceolate serrated leaves and a well-developed aromatic stem and root offer a parameter for preliminary identification of the crude drug. These features are particularly useful in differentiating the plant from closely related species or adulterants. Microscopic characteristics, including uniseriate multicellular trichomes, collenchymatous midrib tissue, V-shaped vascular bundles in leaves, oil cells in roots and characteristic vessel elements observed in powder microscopy of leaves, further strengthen its diagnostic identity. Such microscopic markers are invaluable for confirming authenticity, especially in powdered form where macroscopic features are lost.

Physicochemical parameters revealed higher water-soluble extractive value compared to alcohol-soluble extractive indicates the predominance of polar constituents, correlating well with its traditional aqueous preparations. The slightly acidic pH may contribute to its digestive and antimicrobial actions described in folklore usage. Phytochemical screening demonstrated the presence of alkaloids, flavonoids, coumarin glycosides, tannins, carbohydrates, saponins, and proteins. These constituents are well known for their anti-inflammatory, antimicrobial, antipyretic, digestive and wound-healing activities, thus providing a scientific rationale for the traditional claims. The absence of steroids, cardiac glycosides, and resins further refines the phytochemical identity of the drug. HPTLC fingerprinting of *B. lanceolaria* helps in establishing a characteristic chromatographic profile that can serve as a reference standard for quality control.

Since *Blumea lanceolaria* is an extrapharmacopoeial drug (undocumented in classical Ayurvedic texts), the proposal of its Rasapanchaka assumes special significance. Based on ethnomedicinal usage, organoleptic evaluation, taste threshold analysis, phytochemical correlation and experimental assessment of Virya, the drug is proposed to possess Tikta–Katu–Kasaya Rasa, Laghu–Ruksa Guna, Usna Virya, and Katu Vipaka, with predominant Kapha–Vata Shamaka and Pitta Vardhaka actions. The marginal exothermic reaction observed supports its Usṇa Virya, while taste threshold findings correlate well with the detected phytoconstituents.

CONCLUSION

The present study establishes pharmacognostical standards, physicochemical parameters, phytochemical profile, and HPTLC fingerprint of *Blumea lanceolaria* (Roxb.) Druce. The proposed Rasapanchaka provides an Ayurvedic framework for its therapeutic application. These findings may contribute to its future inclusion in the Ayurvedic Pharmacopoeia after further pharmacological and clinical validation.

REFERENCES

1. Anonymous. The Wealth of India. New Delhi: Council of Scientific and Industrial Research. 2003; Vol II. p. 168.
2. Hajong J, Gupta R, Kaundal M. A Survey on the Ethnomedicinal claims of *Blumea lanceolaria* (Roxb.) Druce - An Anukta Dravya. J Ayurveda Integr Med Sci. 2025 Jul. 9 [cited 2026 Jan 12];10(6):74-82. Available from: https://jaims.in/jaims/article/view/4526
3. Layeeq S. Professor. Shivcharan Dhyani - Exponent of new concepts on Ayurveda principles. J Res Ayurvedic Sci 2024;8: 56-63.
4. S Reshmi, G Chandani, Anukta Dravya Vimarsha (Extra Pharmacopoeial Drugs), Anukta Dravya, Varanasi, Chaukhamba Vishwabharati, 2022. p. 15.
5. Kader SA. A Textbook of Medicinal Botany. 1st ed. Shamsudheen Publishers, 2014; p. 238.
6. Anonymous. Flora of India. Calcutta: Botanical Survey of India.1995. Volume 13; p.130-132.
7. Paul S, Devi N. Floral morphology and foliar anatomy of *Blumea lanceolaria* (Roxburgh) Druce [Asteraceae]. Pleione, East Himalayan Society for Spermatophyte Taxonomy. 2013;7(1): 32 - 38.
8. Anonymous. The Ayurvedic Pharmacopoeia of India. Part 1, vol 4. 1st ed. New Delhi: Government of India, Ministry of Health and Family Welfare, Department of Indian System of Medicine and Homoeopathy; 1991. p. 240.
9. Kokate CK, Purohit AP, Gokhale SB. Pharmacognosy vol. I. Analytical pharmacognosy. 46th ed. Nirali Prakashan; 2010. p. 6.18.
10. Maheshwaran L, Nadarajah L, Senadeera SPNN, Ranaweera CB, Chandana AK and Pathirana RN. Phytochemical Testing Methodologies and Principles for Preliminary Screening/ Qualitative Testing. Asian Plant Res. J. 2024; 12 (5):11-38. doi: https://doi.org/10.9734/aprj/2024/v12i5267.
11. Kokate CK, Purohit AP, Gokhale SB. Pharmacognosy vol. I. Drugs containing gyclosides. 46th ed. Nirali Prakashan; 2010. p. 8.73.
12. Kokate CK, Purohit AP, Gokhale SB. Pharmacognosy vol. I. Analytical pharmacognosy. 46th ed. Nirali Prakashan; 2010. p. 6.19.
13. Kokate CK, Purohit AP, Gokhale SB. Pharmacognosy vol. I. Drugs containing gyclosides. 46th ed. Nirali Prakashan; 2010. p. 8.35.
14. Kokate CK, Purohit AP, Gokhale SB. Pharmacognosy vol. I. Analytical pharmacognosy. 46th ed. Nirali Prakashan; 2010. p. 6.26.
15. Sushruta, Sushruta Samhita, Sutra Sthana, Annapanavidhi Adhyaya, 46/521, edited by Dr. Shastri Ambikadutt, Varanasi, Chaukhamba Sanskrit Sansthan, Vol. 1, 2018, Revised edition, p.288.
16. Dhyani SC. Rasa-panchaka. Rasa. 3rd edition. Chaukhamba Krishnadas Academy, Varanasi; 2008. p.76.
17. Dhyani SC. Rasa-panchaka. Veerya. 3rd edition. Chaukhamba Krishnadas Academy, Varanasi; 2008. p.114-115.

Cite this article as:

Jyoti Hajong and Rosy Gupta. Analytical evaluation of an ethnomedicinal plant *Blumea lanceolaria* (Roxb.) Druce: A pharmacognostical, phytochemical and Rasapanchaka based study. Int. J. Res. Ayurveda Pharm. 2026;17(2):110-117 DOI: http://dx.doi.org/10.7897/2277-4343.17260

Source of support: Nil, Conflict of interest: None Declared