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Phytochemical Screening of Roots of *Lepidagathis keralensis*

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ABSTRACT
Lepidagathis keralensis Madhus. is an endemic plant seen commonly in laterite hills of North Kerala. It is used internally and externally for various diseases in folklore medicine. In this study, the drug was collected from authentic source followed by physicochemical tests, Soxhlet extraction and Qualitative preliminary phytochemical screening of various extracts of root which revealed the presence of potential phytoconstituents like alkaloids, phenols, flavonoids, tannins, saponins and glycosides. Hence this plant can be further investigated for medicinal properties.
Keywords: *Lepidagathis keralensis* , Phytochemical screening

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INTRODUCTION

Recently WHO (World Health Organization) estimated that 80% of the people worldwide rely on herbal medicines for some aspect of their primary health care needs. Around 21000 plant species have the potential for being used as medicinal plants. More than 30% of the entire plant species at one time or other were used for medicinal purposes [1]. Folk refers to a group of people with at least one common factor, the diverse ways and means of therapies in folklore practice are strongly based on empirical knowledge gained from varied experiences and practices which have been understandably adopted after keen observation. Ayurveda incorporates such codified information regarding plants, not mentioned in classical texts but still in practice and are referred to as Anukta dravya (unidentified or extra- pharmacopoeial drugs) by Ayurvedic Pharmacopoeia of India. It is an endemic species of laterite hilly region of North Kerala used in folklore medicine by regional practitioners. Natural products of botanical, animal or mineral sources have initiated the scientific exploration of drugs since ancient times, leads for drug discovery emerge from documented local health traditions. Local health traditions form the integral component of medical heritage of any country. Systematic documentation of such knowledge is crucial to preserve the medical heritage of the country besides scientific validation of its attributes and principles [2]. *Lepidagathis keralensis* Madhus. & N.P.Singh. is an endemic species in the laterite hillock of North Kerala with immense medicinal potential, used only in folklore practice by regional folklore practitioners. *Lepidagathis* Wild comprises about 100 species, mainly distributed in the tropical and warm regions of the world. In India, the genus is represented by 23 species and 8 varieties, among them 15 species are endemic to the Western Ghats and Eastern Ghats of Southern India [3]. *Lepidagathis keralensis* Madhus. & N.P.Singh. is locally known as Paramullu, Paraparappan, Nonganam pullu, Venappacha [4]. This plant was described and illustrated as a new species from Madayippara, barren laterite 'rock' hills of Kannur district of Kerala near Arabian sea coast.

Botanical description

It is a perennial, prostrate, woody herb tenaciously attached to hard laterite soil. Root stock is woody, stem glabrous, quandrangular, much branched to form a carpet of up to 1 square metre. The plant roots at nodes, leaves are narrowly oblong-lanceolate, acute or blunt-acuminate at apex, flowers are sessile [5].
Plants grow in the laterite hillock in wet and dry phases. *Lepidagathis keralensis* Madhus. & N.P.Singh. is found to grow well on the laterite rocks during the dry phase [6].


Fig 1 and 2 . *Lepidagathis keralensis* Madhus. & N.P.Singh whole plant and its roots

Folklore claims of *Lepidagathis keralensis* Madhus. & N.P.Singh.

Folklore practitioners of Madai village of Kannur district [6] and Kasargode use this plant as an anti-inflammatory and antifungal agent and also as a nervine tonic [7]. It was being used as medicine by local healers, especially the folk pediatricians from *Vannan* community who named the plant as *Paramullu* [8]. Spines of this plant is used by Paniya tribes for digestive disorders [9]. Gruel prepared by cooking the spines of the plant with rice is used as a preventive medicine for malnutrition, malabsorption and digestive disorders [10]. Various parts of *Lepidagathis keralensis* Madhus. & N.P.Singh. have been reported for their medicinal uses. Part wise detailed pharmacognostical, phytochemical including physico-chemical study. Chemical constituents of plants can have high therapeutic utility. Tannins one of the most widely occurring group of natural substances in plants, used in medicine as natural mild antiseptics, in the treatment of Diarrhoea, and to check small haemorrhages. Saponins are widely distributed in many plants and figure prominently as active constituents many medicinal plant-based products. They possess surfactant properties and foam strongly when shaken in water, forming colloidal solutions. They also form stable oil in water emulsions acting as protective colloids. Future commercial applications of selected saponins are likely to be based on their biological properties like penetration & absorption enhancers in advanced drug delivery systems & techniques, as potential anticancer agents' antifungal agents [11]. Phenolic compounds and Flavonoids are potential bioactive agents in pharmaceutical and medicinal sectors. Though many flavonoids and phenolic compounds were examined from medicinal plants, a large number of native or endemic medicinal plants are still waiting for bringing out their novel compounds from profiling works [12].

MATERIAL AND METHODS

Drug was collected from its natural habitat of laterite hillock near Govt. Ayurveda college Kannur campus. It was authenticated, washed and shade dried for 7 days.

Physico-chemical constants

Physico chemical constants such as ash values, extractive value and loss on drying were carried out [13, 14, 15, 16].

Extraction

The dried and powdered root of *Lepidagathis keralensis* Madhus. & N.P.Singh. was subjected to Successive solvent extraction using Soxhlet apparatus with organic solvents in the increasing order of polarities like Hexane, Chloroform, ethyl acetate, Methanol, Cold alcohol, Hot alcohol and Hot water. The solvent was removed by distillation and concentrated. The resultant extracts were utilised for preliminary phytochemical investigation.

Qualitative chemical examination

The extracts obtained as above were subjected to qualitative chemical tests for identifying various classes of plant constituents.

Phytochemical screening

Phytochemical screening was performed as per standard procedures.

RESULTS AND DISCUSSION

Physicochemical constants

The percentage of Total ash, Water insoluble ash, Acid insoluble ash, Moisture content, Total sugar and reducing sugar were estimated and the results are presented in Table 1.

Table 1. Physico-chemical constants of root of *Lepidagathis keralensis* Madhus. & N.P.Singh.

Parameters	Unit	Result	Test method
Total Ash	%	10.81	IP 2018
Water Insoluble Ash	%	10.71	IP 2018
Acid Insoluble Ash	%	3.97	IP 2018
Moisture content	%	11.23	API Part 1, Vol1
Total Sugar	%	Nil	API Part 1, Vol VI
Reducing Sugar	%	Nil	API Part 1, Vol VI

Moisture content of the drug was found to be 11.23%.

Table 2. Extractive values of various extracts of root of *Lepidagathis keralensis* Madhus. & N.P.Singh.

Extraction (3.0313g drug) Solvent	Quantity of solvent (ml)	Weight of extract (g)	Total yield of extract (%)	Test method
Hexane	250	0.1092	3.60	Soxhlet
Extraction				
Chloroform	250	0.094	3.10	
Ethyl Acetate	250	0.0815	2.70	
Methanol	250	0.1776	5.86	
Cold alcohol	250	0.0092	0.30	
Hot alcohol	250	0.0158	0.50	
Hot water	250	0.0599	1.98	

Extractive values are of great importance for quality control of crude drugs. The results showed that Methanol extractive is more, 5.86%.

Table 3.Qualitative preliminary phytochemical screening of various extracts of *Lepidagathis keralensis* root phytochemical screening

Parameters							
Solvent Extract	**Hexane**	**Chloroform**	**Ethyl Acetate**	**Methanol**	**Cold Alcohol**	**Hot Alcohol**	**Hot water**
Flavonoids	-	+	-	-	-	-	-
Saponins	-	-	-	+	-	-	+
Tannins	-	-	-	-	-	-	-
Phenols	-	+	+	+	+	+	+
Steroids	-	-	-	-	-	-	-
Alkaloids	-	-	-	+	-	+	+

CONCLUSION

Plants are important sources of drugs and plays a major role in drug discovery. *Lepidagathis keralensis* Madhus. & N.P.Singh. is an endemic species North Kerala which is used by local practitioners. The parameters investigated through the present study can be useful for identifying, validating, preserving the quality, purity and efficacy of the drug and will help researchers in future studies.

REFERENCES

1. www.nhp.gov.in/introduction
2. Srikanth, N., Maheshwar, T., & Singh, S. (2017). Methodical documentation of local health traditions and folklore claims: scope relevance and suggested format. *J Drug Res Ayurvedic Sci*, *2*(2), 149-155.
3. Raja, P., Dhatchanamoorthy, N., Soosairaj, S., & Jansirani, P. (2020). New distribution record of two endemic plant species, Euphorbia kadapensis Sarojin. & RRV Raju (Euphorbiaceae) and *Lepidagathis keralensis* Madhus. & NP Singh (Acanthaceae), for Karnataka, India. *Journal of Threatened Taxa*, *12*(14), 17045-17048.
4. Madhusoodanan, P. V., & Singh, N. P. (1992). A new species of *Lepidagathis* (Acanthaceae) from South India. *Kew Bulletin*, 301-303.
5. Divaka, M. C., John, J., & Vyshnavidevi, P. (2013). Herbal remedies of Madayipara hillock tribals in Kannur district,

Kerala, India. *Journal of Medicinal Plants*, *16*, 34-42.
6. Palakkal, L., Hukuman, N. Z., & Mullappally, J. (2017). Antioxidant activities and chemical composition of various crude extracts of *Lepidagathis keralensis*. *Journal of applied pharmaceutical science*, *7*(6), 182-189.
7. Leena, P., Zeinul Hukuman, N. H., Biju, A. R., & Jisha, M. (2019). Studies on methanolic extract of *Lepidagathis keralensis* as green corrosion inhibitor for mild steel in 1M HCl. *Journal of Electrochemical Science and Technology*, *10*(2), 231-243.
8. Borude, D. B., Natekar, P. D., Gosavi, K. V. C., & Chandore, A. N. (2020). Lepidagathis ushae: a new species of Acanthaceae from the lateritic plateaus of the Konkan region, Maharashtra, India. *Kew Bulletin*, *75*, 1-6.
9. Vs, A., Arya, S., Biju, P., Josekutty, E. J., & Augustine, J. (2020). *Lepidagathis ananthapuramensis* (Acanthaceae): a new species from the lateritic plateaus of Kerala, India. *Phytotaxa*, *460*(4), 269-276.
10. Narayanan, M. R., Sunil, C. N., Nandakumar, M. K., Sujana, K. A., Joseph, J. P., & Anil Kumar, N. (2012). *Lindernia madayiparense* (Linderniaceae)–a new species from Kerala, India. *Int. J. Plant. Anim. Environ. Sci*, *2*, 59-62.
11. Waller, G. R., & Yamasaki, K. (Eds.). (2013). *Saponins used in traditional and modern medicine* (Vol. 404). Springer Science & Business Media.
12. Tungmunnithum, D., Thongboonyou, A., Pholboon, A., & Yangsabai, A. (2018). Flavonoids and other phenolic compounds from medicinal plants for pharmaceutical and medical aspects: An overview. *Medicines*, *5*(3), 93.

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