



Research Article

Medicinal Plants and Their Use in Human Beings

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DOI: <https://doi.org/10.5281/zenodo.21351469>

Abstract

Throughout history, plants possessing medicinal value have occupied a central place in the healing traditions of societies worldwide, functioning as an abundant reservoir of naturally occurring bioactive substances. Over the last several years, attention has increasingly turned toward tapping these plant-based resources for use in industry. Investigating medicinal plants alongside the phytochemicals they yield reveals a wide range of prospects and previously unexplored avenues for further study. The work reported here is directed mainly at recognising and cataloguing the phytochemical constituents of selected species together with the ways in which they have traditionally been used.

Manuscript Information

- **ISSN No:** 2583-7397
- **Received:** 08-05-2026
- **Accepted:** 02-07-2026
- **Published:** 14-07-2026
- **IJCRM:** 5(SP1); 2026: 138-140
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- **Plagiarism Checked:** Yes
- **Peer Review Process:** Yes

How to Cite this Article

Kumar P. Medicinal Plants and Their Use in Human Beings. Int J Contemp Res Multidiscip. 2026;5(SP1):138-140.

Access this Article Online



www.multiarticlesjournal.com

KEYWORDS: Medicinal Plants, Kadam, Molashri, HPLC, UV-IR, NMR

INTRODUCTION

Plants used for medicinal purposes carry a long-standing tradition of being employed to relieve a variety of health conditions. Apart from their familiar curative qualities, newer studies have drawn attention to a further facet of their usefulness they behave as reservoirs of bioactive molecules that are of considerable relevance to the chemical sector. Of the different plant parts, the dried leaves of such species have become especially noteworthy, since they house a broad assortment of phytochemicals applicable to numerous industrial areas. Each species commands interest owing to the particular blend of phytochemicals it carries, with every one supplying its own distinctive set of bioactive compounds.

Table 1: Phytochemical Composition of Dry Leaves

Plant	Alkaloids	Flavonoids	Phenols	Terpenoids	Tannins	Essential Oil
Kadam	0.2	0.5	2.5	0.4	3.7	0.3
Molashri	0.5	3.2	1.5	0.7	0.5	0.2

The constituents shown above provide the groundwork for the diverse range of uses examined in the sections that follow. Charting the phytochemical profile of each plant accomplishes more than merely showing how one species differs from the other; it also draws out the value that each could contribute to the chemical industry.

METHODOLOGY

Foliage of Kadam (*Neolamarckia cadamba*) and Molashri

Table 3: Industrial Applications of Isolated Phytochemicals

Plant	Compound	Pharmaceutical Application	Agrochemical Applications	Specialty Chemical Application
Kadam	Tannins	Drug formulation Wound healing	Crop protection Soil improvement	Leather tanning Wood preservation Adhesives
Molashri	Flavonoids Phenols	Anti-inflammatory Antioxidants	Plant growth regulation Biofertilizers	Natural colorants Food additives

RESULT AND DISCUSSION

Inspecting the dried leaves of Kadam and Molashri uncovered a varied set of bioactive compounds, each of which offers its own possibilities for industrial use.

Kadam (*Neolamarckia cadamba*): The leaves of Kadam recorded a strikingly high tannin figure (3.7%). As adaptable compounds, tannins are put to work in leather tanning, wood preservation and as naturally derived antioxidants. These leaves further carry moderate levels of phenols (2.5%) along with flavonoids (0.4%), which lend additional value to the material.

Molashri (*Bauhinia variegata*): Molashri leaves were remarkable for their generous flavonoid (3.2%) and phenol (1.5%) content. Compounds of this kind indicate potential service as natural colouring agents and antioxidants within the food and cosmetic industries. In addition, these leaves hold smaller shares of alkaloids (0.5%) and terpenoids (0.7%).

The marked difference in phytochemical composition between the two plants points up their worth as suppliers of valuable bioactive compounds fit for a spread of industrial purposes, as set out in the following section dealing with the industrial application of phytochemicals:

(*Bauhinia variegata*) was collected from the natural sites where each species grows, at the season best suited for gathering. Correct recognition of the two plants was carried out by adhering to well-established botanical practices and taxonomic references. Both the Kadam and the Molashri material were sourced from the outer areas of Meerut during the summer period.

Phytochemical Analysis

A selection of phytochemical constituents — specifically alkaloids, flavonoids, phenols, terpenoids and tannins — was drawn out from the dried leaves using a suitable solvent system and thereafter examined by means of accepted analytical techniques, with the outcomes presented below:

Table 2: Phytochemical Analysis Details

Plant	Alkaloids Extraction (%)	Flavonoids Extraction (%)	Phenols Extraction (%)	Terpenoids Extraction (%)	Tannins Extraction (%)
Kadam	0.3	2.0	3.0	0.7	4.3
Molashri	0.6	2.9	2.5	1.0	0.9

Chemical Industry Application

The phytochemicals recovered from the dried leaves of both Kadam and Molashri were appraised for the roles they might fill within the chemical industry. Since these constituents show a wide spread of chemical characteristics, they emerge as promising feedstocks for manufacturing pharmaceuticals, agrochemicals and specialty chemical products.

Kadam: Leather tanning, antioxidants, wood preservation.

Molashri: Flavonoids, phenols, natural colorants, flavour enhancers, antioxidants.

CONCLUSION

The extensive assortment of compounds identified in the present work spans a wide field of applications across the chemical industry, reaching into pharmaceuticals, fragrances, cosmetics, leather goods and food production. This breadth makes plain just how versatile and significant these naturally sourced substances are. To take full advantage of the economic and ecological rewards these plant resources offer, sustained research paired with close partnership between scientific and industrial communities will be indispensable, allowing the openings created by these remarkable phytochemicals to be probed and widened still further.

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