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Ethnomedicinal Importance, Phytochemistry, And Pharmacological Potential of Medicinal Plants Belonging to The Asteraceae Family: A Comprehensive Review

Aparna T.V.*, Dr. P.L.Rajagopal, Abhirami B., Anusha M.I ., Aswani M.V., Aswathy K.

College of Pharmaceutical Sciences, Government Medical college Kannur.

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ABSTRACT

The family Asteraceae (Compositae) is one of the largest and most diverse families of flowering plants, comprising more than 32,000 species distributed across tropical, subtropical, and temperate regions worldwide. Members of this family have been extensively utilized in traditional healthcare systems, including Ayurveda, Traditional Chinese Medicine, Siddha, Unani, and numerous indigenous medical practices, owing to their remarkable therapeutic potential. The medicinal importance of Asteraceae is primarily attributed to its rich diversity of bioactive secondary metabolites, including flavonoids, phenolic acids, terpenoids, sesquiterpene lactones, alkaloids, tannins, saponins, and essential oils, which collectively contribute to a broad spectrum of biological activities. Numerous species have been traditionally employed for the management of fever, diabetes mellitus, liver disorders, respiratory diseases, gastrointestinal ailments, inflammatory conditions, skin diseases, wounds, and neurological disorders, many of which have subsequently been supported by experimental pharmacological studies. The present review comprehensively summarizes the ethnomedicinal importance, phytochemical constituents, and pharmacological activities of medicinal plants belonging to the Asteraceae family. Particular emphasis is placed on the relationship between traditional therapeutic applications and contemporary scientific evidence. The review discusses the major classes of phytochemicals reported from medicinal Asteraceae species and highlights their pharmacological significance in relation to antioxidant, anti-inflammatory, antimicrobial, anticancer, hepatoprotective, antidiabetic, neuroprotective, wound-healing, and immunomodulatory activities. Representative medicinal plants, including *Artemisia annua*, *Calendula officinalis*, *Achillea millefolium*, *Eclipta prostrata*, *Silybum marianum*, *Taraxacum officinale*, and several species of the genus *Blumea*, are presented to illustrate the therapeutic diversity of this family.Special attention is given to the genus *Blumea*, particularly *Blumea balsamifera* and *Blumea lacera*, which have demonstrated promising antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, and acetylcholinesterase inhibitory activities supported by phytochemical and pharmacological investigations. In contrast, *Blumea axillaris* (Lam.) DC. remains comparatively underexplored despite its taxonomic relationship with pharmacologically important congeners and its reported ethnomedicinal relevance. The limited availability of scientific data on its phytochemical profile and biological activities highlights an important research gap and underscores the need for systematic pharmacognostical, phytochemical, and pharmacological investigations. Overall, this review integrates traditional knowledge with contemporary scientific evidence to provide an updated overview of the medicinal significance of the Asteraceae family. It also identifies existing research gaps, emphasizes the pharmaceutical potential of lesser-studied species such as *Blumea axillaris*, and provides a scientific foundation for future studies aimed at the discovery and development of safe, effective, and evidence-based plant-derived therapeutic agents.

Keywords: *Asteraceae*, ethnomedicine, phytochemistry, pharmacological activities, medicinal plants,natural products.

I. INTRODUCTION

Medicinal plants have served as the cornerstone of traditional healthcare systems since the dawn of human civilization and continue to play a pivotal role in contemporary medicine. Throughout history, diverse cultures have relied on plant-based remedies for the prevention, management, and treatment of numerous diseases. Even with remarkable advances in synthetic pharmaceuticals, medicinal plants remain indispensable owing to their therapeutic efficacy, accessibility, affordability, and relatively favorable safety profiles. The medicinal

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properties of plants are primarily attributed to a diverse array of bioactive secondary metabolites, including alkaloids, flavonoids, terpenoids, phenolic compounds, glycosides, tannins, coumarins, and essential oils, many of which possess multiple pharmacological activities. In addition to their direct therapeutic applications, natural products have made significant contributions to modern drug discovery, serving as valuable lead molecules for the development of medicines used in the treatment of infectious diseases, cancer, cardiovascular disorders, diabetes, inflammatory conditions, and neurodegenerative diseases .[1,3]

The importance of herbal medicine in global healthcare has been consistently recognized by the World Health Organization (WHO). According to WHO, a substantial proportion of the population in developing countries depends on traditional medicine, predominantly plant-derived preparations, for primary healthcare. Furthermore, the use of herbal medicines has expanded considerably because of growing public awareness regarding natural therapies and increasing preference for complementary and alternative medicine. The WHO Traditional Medicine Strategy also emphasizes the integration of evidence-based traditional medicine into national healthcare systems through scientific validation, quality assurance, safety assessment, and rational utilization of medicinal plants. Advances in phytochemistry, pharmacology, biotechnology, metabolomics, and analytical instrumentation have further accelerated scientific investigation of medicinal plants and supported many traditional therapeutic claims.[4,6]

Among the numerous medicinal plant families, Asteraceae (Compositae) occupies a unique position because of its extraordinary botanical diversity, ecological adaptability, economic value, and therapeutic significance. It is recognized as one of the largest families of flowering plants, comprising approximately 1,620–1,700 genera and more than 32,000 accepted species distributed throughout tropical, subtropical, and temperate regions of the world. Members of the family are characterized by their distinctive capitulum inflorescence, syngenesious stamens, inferior ovary, and cypsela fruit. Their remarkable adaptability has enabled them to colonize diverse habitats and achieve worldwide distribution. [7,8]

The Asteraceae family exhibits remarkable geographical diversity and is represented on every continent except Antarctica. Numerous species occur naturally throughout Asia, Africa, Europe, North and South America, and Australia, where they contribute substantially to regional biodiversity. India is particularly rich in Asteraceae diversity, with medicinal species distributed across the Himalayan region, Western Ghats, Eastern Ghats, and Indo-Gangetic plains. Several members are cultivated commercially, whereas many others occur as wild herbs or shrubs and continue to support traditional healthcare practices. [7,9]

Beyond their medicinal importance, Asteraceae species possess considerable economic value. Numerous representatives are cultivated as ornamental plants, including *Calendula officinalis*, *Chrysanthemum* spp., *Gerbera jamesonii*, and *Tagetes erecta*. Economically important crops such as sunflower (*Helianthus annuus*), lettuce (*Lactuca sativa*), globe artichoke (*Cynara scolymus*), chicory (*Cichorium intybus*), and safflower (*Carthamus tinctorius*) also belong to this family. Many species serve as sources of edible oils, essential oils, nutraceuticals, herbal medicines, cosmetics, and livestock feed, highlighting their substantial agricultural and industrial importance .[7,9]

The medicinal significance of Asteraceae has been recognized in Ayurveda, Siddha, Unani, Traditional Chinese Medicine, and indigenous healthcare systems worldwide. Plants belonging to this family have been used for the management of fever, inflammation, respiratory disorders, gastrointestinal diseases, liver ailments, diabetes, microbial infections, dermatological conditions, wounds, pain, and neurological disorders. Many of these traditional uses have subsequently been supported by phytochemical and pharmacological studies. Their therapeutic activities are largely associated with flavonoids, phenolic acids, sesquiterpene lactones, terpenoids, alkaloids, tannins, saponins, coumarins, and volatile oils, which exhibit antioxidant, anti-inflammatory, antimicrobial, anticancer, hepatoprotective, antidiabetic, neuroprotective, immunomodulatory, and wound-healing properties. [2,7,10]

Among the medicinal genera of Asteraceae, *Blumea* has emerged as an important source of bioactive phytochemicals with promising therapeutic applications. Species such as *Blumea balsamifera* and *Blumea lacera* have demonstrated antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, antidiabetic, and acetylcholinesterase inhibitory activities, supporting several of their traditional medicinal uses. These pharmacological properties are largely attributed to flavonoids, phenolic compounds, sesquiterpenes, and essential oils. [11,13]

In contrast, *Blumea axillaris* (Lam.) DC. remains comparatively underexplored despite its

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taxonomic relationship with pharmacologically important congeners and its reported traditional medicinal use. Limited information is available regarding its phytochemical constituents, pharmacological activities, and mechanism of action, indicating the need for comprehensive pharmacognostical, phytochemical, and pharmacological investigations. [12,13]

Although numerous studies have documented the ethnomedicinal uses, phytochemistry, and pharmacological properties of individual Asteraceae species, the available information remains scattered. Therefore, an updated review integrating traditional knowledge with contemporary scientific evidence is essential to identify research gaps, facilitate conservation, and promote future natural product-based drug discovery. Accordingly, the present review summarizes the ethnomedicinal importance, phytochemical constituents, and pharmacological activities of medicinal plants belonging to the Asteraceae family, with particular emphasis on the genus *Blumea* and the future research prospects of *Blumea axillaris*.

Scientific name	Common name	Part(s) used	Traditional use(s)
Blumea balsamifera (L.) DC.	Sambong	Leaves	Fever, wounds, urinary disorders, respiratory ailments
Blumea lacera (Burm.f.) DC.	Kukurshonga	Whole plant	Inflammation, dysentery, fever, skin diseases
Blumea axillaris (Lam.) DC.	Pink Blumea	Leaves	Traditionally used for inflammatory conditions, fever, and general ailments
Artemisia annua L.	Sweet wormwood	Leaves, aerial parts	Malaria, fever, inflammation
Calendula officinalis L.	Pot marigold	Flowers	Wound healing, burns, skin disorders, inflammation
Achillea millefolium L.	Yarrow	Aerial parts	Wounds, bleeding, fever, digestive disorders
Eclipta prostrata (L.) L.	False daisy (Bhringraj)	Whole plant	Liver disorders, hair care, jaundice, skin diseases
Silybum marianum (L.) Gaertn.	Milk thistle	Seeds (fruits)	Hepatitis, liver protection, detoxification
Taraxacum officinale F.H. Wigg.	Dandelion	Root, leaves	Diuretic, digestive disorders, liver ailments
Cichorium intybus L.	Chicory	Root, leaves	Diabetes, digestive disorders, liver diseases
Matricaria chamomilla L.	German chamomile	Flowers	Gastrointestinal disorders, anxiety, inflammation
Arnica montana L.	Arnica	Flowers	Bruises, sprains, muscular pain, inflammation
Tanacetum parthenium (L.) Sch.Bip.	Feverfew	Leaves	Migraine, fever, arthritis
Helianthus annuus L.	Sunflower	Seeds, flowers	Wound healing, nutritional support, inflammation
Saussurea lappa (Decne.) Sch.Bip.	Costus	Root	Asthma, gastrointestinal disorders, inflammation

Table no. 1 Plant parts and their traditional uses

ETHNOMEDICINAL IMPORTANCE OF MEDICINAL PLANTS BELONGING TO THE ASTERACEAE FAMILY

The family Asteraceae (Compositae) is one of the largest and most medicinally important families of flowering plants. Species belonging to this family have been widely used in traditional healthcare systems, including Ayurveda, Traditional Chinese Medicine (TCM), Siddha, Unani, African traditional medicine, Native American medicine, and various indigenous healing practices. Their therapeutic value is largely attributed to the presence of diverse bioactive phytochemicals, such as flavonoids,

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phenolic acids, sesquiterpene lactones, terpenoids, alkaloids, coumarins, tannins, and essential oils [7,9,10].

Management of Fever : Fever is one of the oldest conditions treated using medicinal plants. Several Asteraceae species are traditionally used as natural antipyretics due to their anti-inflammatory and antimicrobial properties. *Artemisia annua* is well known for treating malarial fever and is the source of artemisinin. *Blumea balsamifera*, *Achillea millefolium*, and *Eclipta prostrata* are also traditionally used to reduce fever and relieve symptoms associated with infections. Their antipyretic effects are mainly attributed to the inhibition of inflammatory mediators and prostaglandin synthesis [10,12].

Management of Diabetes Mellitus : Several Asteraceae species are traditionally used for the management of diabetes mellitus. Plants such as *Taraxacum officinale*, *Cichorium intybus*, *Eclipta prostrata*, and *Artemisia* spp. help regulate blood glucose levels by inhibiting carbohydrate-digesting enzymes, improving insulin sensitivity, reducing oxidative stress, and protecting pancreatic β-cells. These effects are mainly attributed to flavonoids, chlorogenic acid, caffeic acid, and sesquiterpene lactones [2,7,10].

Management of Liver Disorders : Several Asteraceae plants are traditionally used to treat liver disorders. *Silybum marianum* (milk thistle) is the best-known species, with silymarin providing antioxidant, anti-inflammatory, and hepatoprotective effects. *Eclipta prostrata* is widely used in Ayurveda for jaundice and liver diseases, while *Cichorium intybus* and *Blumea balsamifera* are also traditionally used to support liver health and protect against liver damage [2,7,11].

Management of Skin Diseases : Several Asteraceae plants are traditionally used to treat skin diseases because of their antimicrobial, anti-inflammatory, antioxidant, and wound-healing properties. *Calendula officinalis* is commonly used for burns, cuts, eczema, and dermatitis, while *Arnica montana* helps reduce bruising and swelling. *Blumea balsamifera* is traditionally applied to wounds, ulcers, and other inflammatory skin conditions. These effects are mainly attributed to flavonoids, triterpenoids, essential oils, and sesquiterpene lactones, which promote tissue repair and reduce infection and inflammation [7,10,11].

Management of Gastrointestinal Disorders : Several Asteraceae plants are traditionally used to treat digestive disorders such as indigestion, diarrhea, constipation, stomach pain, ulcers, and loss of appetite. *Matricaria chamomilla* (chamomile) helps relieve stomach discomfort, while *Taraxacum officinale* and *Cichorium intybus* improve digestion and appetite. *Blumea balsamifera* is also used to treat stomach pain and diarrhea. These beneficial effects are mainly due to their anti-inflammatory, antimicrobial, and digestive-supporting properties [7,10,11].

Management of Respiratory Diseases : Several Asteraceae plants are traditionally used to treat respiratory disorders such as cough, bronchitis, asthma, influenza, and the common cold. *Blumea balsamifera* is commonly used as a herbal tea or steam inhalation to relieve cough and nasal congestion, while *Tussilago farfara* is valued for its expectorant action. *Matricaria chamomilla* is also used to soothe sore throat and respiratory inflammation. These effects are mainly due to essential oils, flavonoids, and terpenoids with bronchodilator, antimicrobial, and anti-inflammatory properties [7,10,11].

Management of Inflammatory Disorders : Asteraceae plants have long been used to treat inflammation, pain, swelling, arthritis, and rheumatism. Species such as *Arnica montana*, *Achillea millefolium*, *Calendula officinalis*, *Artemisia* spp., and *Blumea* spp. exhibit significant anti-inflammatory activity. Their effects are mainly attributed to flavonoids, sesquiterpene lactones, and terpenoids, which suppress inflammatory mediators and reduce tissue inflammation [2,7,10,12].

Wound Healing : The wound-healing properties of several Asteraceae species have been documented in both traditional medicine and modern scientific investigations. *Calendula officinalis* remains one of the most widely used medicinal plants for accelerating wound contraction, collagen synthesis, angiogenesis, and epithelial regeneration. *Achillea millefolium* has historically been employed to stop bleeding and promote tissue repair, while *Blumea balsamifera* leaf preparations are traditionally applied to cuts, burns, and postoperative wounds. Experimental studies suggest that the antioxidant, antimicrobial, and anti-inflammatory activities of these plants contribute to faster healing by minimizing infection and enhancing tissue regeneration [7,10,11].

Management of Neurological Disorders : Several Asteraceae plants are traditionally used to improve memory, relieve headache and anxiety, and manage age-related cognitive disorders. Species such as *Blumea lacera*, *Blumea balsamifera*, and *Artemisia* spp. have shown antioxidant, anti-inflammatory, and acetylcholinesterase inhibitory activities, suggesting

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potential benefits in neurodegenerative diseases such as Alzheimer's disease. However, the neuroprotective potential of *Blumea axillaris* remains largely unexplored and requires further phytochemical and pharmacological investigation [2,11,13].

MAJOR PHYTOCHEMICAL CONSTITUENTS OF MEDICINAL PLANTS BELONGING TO THE ASTERACEAE FAMILY AND THEIR PHARMACOLOGICAL SIGNIFICANCE

Phytochemical class	Representative compounds	Representative species	Major biological activities
Flavonoids	Quercetin, Kaempferol, Luteolin, Apigenin	*Blumea balsamifera*, *Calendula officinalis*, *Achillea millefolium*	Antioxidant, anti-inflammatory, antimicrobial, neuroprotective
Phenolic acids	Chlorogenic acid, Caffeic acid, Ferulic acid	*Cichorium intybus*, *Taraxacum officinale*, *Eclipta prostrata*	Antioxidant, hepatoprotective, antidiabetic
Terpenoids	α-Pinene, β-Pinene, Limonene, Camphor	*Blumea balsamifera*, *Artemisia annua*, *Matricaria chamomilla*	Anti-inflammatory, antimicrobial, analgesic
Sesquiterpene lactones	Artemisinin, Parthenolide, Costunolide	*Artemisia annua*, *Tanacetum parthenium*, *Saussurea lappa*	Antimalarial, anticancer, anti-inflammatory
Alkaloids	Pyrrolizidine alkaloids	*Senecio* spp., *Ageratum conyzoides*	Antimicrobial, analgesic, anticancer
Essential oils	Camphor, Borneol, 1,8-Cineole	*Blumea balsamifera*, *Achillea millefolium*, *Calendula officinalis*	Antimicrobial, wound healing, anti-inflammatory
Tannins	Hydrolysable and condensed tannins	*Calendula officinalis*, *Eclipta prostrata*	Astringent, antioxidant, wound healing
Saponins	Triterpenoid and steroidal saponins	*Blumea* spp., *Eclipta prostrata*, *Artemisia* spp.	Immunomodulatory, hepatoprotective, antioxidant

Table no. 2 Phytochemical constituents and their major biological activites

II. CONCLUSION

The **Asteraceae** family represents one of the largest and most valuable groups of medicinal plants, with a long history of use in traditional healthcare systems worldwide [7,9]. Numerous species have been employed for the management of fever, inflammation, liver disorders, respiratory and gastrointestinal diseases, diabetes, skin disorders, wounds, and neurological conditions. Scientific studies have validated many of these traditional uses, demonstrating a wide range of pharmacological activities, including antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, antidiabetic, anticancer, immunomodulatory, wound-healing, and neuroprotective effects [2,7,10]. These therapeutic properties are mainly attributed to the diverse phytochemical constituents of Asteraceae plants, particularly flavonoids, phenolic acids, terpenoids, sesquiterpene lactones, alkaloids, tannins, saponins, and essential oils [2,10].

Several medicinal species, including *Artemisia annua*, *Silybum marianum*, *Calendula officinalis*, *Achillea millefolium*, *Eclipta prostrata*, *Taraxacum officinale*, and *Cichorium intybus*, have been extensively investigated and continue to provide valuable leads for natural product-based drug discovery [1,2,7,10]. Among the medicinal genera, *Blumea* has gained considerable attention because of its diverse biological activities. While *Blumea balsamifera* and *Blumea lacera* have been widely studied and reported to possess antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, and acetylcholinesterase inhibitory activities, *Blumea axillaris* remains inadequately explored [11,13]. Further investigations focusing on its phytochemical profile, pharmacological activities, mechanisms of action,

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safety, and standardization are necessary to establish its therapeutic potential.

Overall, the Asteraceae family remains a rich source of bioactive compounds with significant pharmaceutical potential. Future multidisciplinary research integrating ethnomedicinal knowledge with modern phytochemical and pharmacological approaches may facilitate the discovery of novel therapeutic agents, particularly from underexplored species such as *Blumea axillaris* [1,2,11,13].

REFERENCES

[1]. **Newman DJ**, Cragg GM. Natural products as sources of new drugs over nearly four decades from 1981 to 2019. *J Nat Prod.* 2020;83(3):770-803.

[2]. **Atanasov AG**, Zotchev SB, Dirsch VM, Supuran CT. Natural products in drug discovery: advances and opportunities. *Nat Rev Drug Discov.* 2021;20(3):200-216.

[3]. **Cragg GM**, Pezzuto JM. Natural products as a vital source for the discovery of cancer chemotherapeutic and chemopreventive agents. *Med Princ Pract.* 2016;25(Suppl 2):41-59.

[4]. **World Health Organization.** *WHO Traditional Medicine Strategy 2014-2023.* Geneva: World Health Organization; 2013.

[5]. **World Health Organization.** *WHO Global Report on Traditional and Complementary Medicine 2019.* Geneva: World Health Organization; 2019.

[6]. **Ekor M.** The growing use of herbal medicines: issues relating to adverse reactions and challenges in monitoring safety. *Front Pharmacol.* 2014;4:177.

[7]. **Funk VA**, Susanna A, Stuessy TF, Bayer RJ, editors. *Systematics, Evolution, and Biogeography of Compositae.* Vienna: International Association for Plant Taxonomy; 2009.

[8]. **Mandel JR**, Dikow RB, Siniscalchi CM, Thapa R, Watson LE, Funk VA. A fully resolved backbone phylogeny reveals numerous dispersals and explosive diversifications throughout the history of Asteraceae. *Proc Natl Acad Sci U S A.* 2019;116(28):14083-14088.

[9]. **Bremer K.** *Asteraceae: Cladistics and Classification.* Portland (OR): Timber Press; 1994.

[10]. **Chadwick M**, Trewin H, Gawthrop F, Wagstaff C. Sesquiterpene lactones: benefits to plants and people. *Int J Mol Sci.* 2013;14(6):12780-12805.

[11]. **Pang YX**, Wang D, Fan ZW, Chen XW, Yu FL, Hu X, et al. Blumea balsamifera: A phytochemical and pharmacological review. *Molecules.* 2014;19(7):9453-9477.