



Review Article

Ethnomedicinal and Therapeutic Potential of Common Medicinal Plants For Women's Health - A Systematic Literature Review

Rashmi H Poojara¹, Alvina Rose^{1*}

1. Associate Professor, Department of Home Science and Centre for Research, St. Teresa's College (Autonomous), Ernakulam, Kerala, India.
2. R&D Associate, Novel Nutrilab, Teresian Innovation and Business Incubation Council (TIBIC), St. Teresa's College (Autonomous), Ernakulam, Kerala, India.

Received: 05-02-2026

Accepted: 06-09-2026

Published: 30-09-2026

Abstract

Background and Objective: Women experience life-stage-specific nutritional, hormonal, reproductive, metabolic and skeletal health challenges. This review critically evaluates the nutritional, phytochemical, functional and therapeutic potential of selected Indian medicinal plants in relation to women's health, with emphasis on menstrual regulation, anemia, reproductive health, metabolic disorders, menopause and bone health. **Methods:** A structured systematic literature review was conducted using PubMed, Scopus, Web of Science and Google Scholar. Peer-reviewed English-language studies published between 2016 and 2026 were screened using predefined keywords related to medicinal plants, phytochemicals, functional foods and women's health. After duplicate removal and screening, the eligible studies were thematically synthesized according to botanical and ethnomedicinal characteristics, nutritional composition, phytochemical profiles, health benefits, product applications and safety considerations. **Results:** The selected literature indicates that medicinal plants provide diverse nutritional and bioactive constituents, including polyphenols, flavonoids, saponins, alkaloids, phytoestrogens, vitamins, minerals and dietary fiber. More than half of the included studies reported potential benefits related to hormonal regulation, anemia management, metabolic health, menopausal symptoms, antioxidant protection, or reproductive health. However, evidence was heterogeneous, with substantial reliance on preclinical, traditional-use and narrative evidence and limited women-specific clinical trials and standardized dosage data. **Conclusion:** Selected medicinal plants show promise as culturally acceptable functional-food and nutraceutical ingredients for women's health. Future research should prioritize standardized preparations, well-designed clinical trials, dose-response evaluation, safety assessment and locally relevant food-based interventions. Evidence-based education, quality control and regulatory standardization are essential for their safe translation into women-centered health strategies.

Keywords: Medicinal Plants, Menstrual Regulation, Hormonal Modulation, Anemia, Reproductive Health, Bone Health.

Access this article
online

Website:
<https://ijam.co.in>



DOI: <https://doi.org/10.47552/ijam.v17i2.7006>

Introduction

Women's health is influenced by biological, hormonal, nutritional and socio-cultural determinants across the lifespan from adolescence through reproductive years, menopause and aging. Women experience gender-specific health challenges such as menstrual irregularities, anemia, reproductive and hormonal imbalances, gestational and postpartum complications, osteoporosis, metabolic disorders and menopause-related symptoms (1). There is growing interest in holistic and culturally

acceptable interventions like medicinal plants, which have historically played a central role in health management in traditional medical systems like Ayurveda.

Medicinal plants possess a spectrum of bioactive constituents, including polyphenols, flavonoids, saponins, alkaloids and terpenoids, which contribute to antioxidative, anti-inflammatory, hormone-modulating and metabolic regulatory functions. These properties are central to the concept of functional foods, wherein food components provide health benefits beyond basic nutrition. Research suggests that certain plant-derived compounds, particularly phytoestrogens, exhibiting estrogen-like activity may alleviate conditions associated with estrogen deficiency, such as menopausal symptoms, bone demineralization and metabolic disturbances(2).

Most existing reviews focus either on pharmacological effects or ethnobotanical documentation, with limited emphasis on

* Corresponding Author:

Alvina Rose

R&D Associate, Novel Nutrilab, Teresian Innovation and Business Incubation Council (TIBIC), St. Teresa's College (Autonomous), Ernakulam, Kerala, India.

Email Id: alvinarose666@gmail.com

integrating nutritional composition, functional properties and women-specific health outcomes within a single framework. Many studies discuss medicinal plants in a generalized population context, without addressing women's physiological specificity, such as hormonal fluctuations, reproductive demands and menopause-related metabolic changes. The available research often evaluates individual bioactivities in isolation, neglecting the synergistic effects of nutrients and phytochemicals when medicinal plants are consumed as foods or dietary ingredients. Furthermore, variability in plant species, growing conditions, processing methods and dosage complicates standardization and translation of findings into dietary recommendations.

Unlike earlier reviews that predominantly emphasize therapeutic efficacy or ethnomedical relevance, this manuscript envisages a compilation on the basis of nutritional value, functional attributes and therapeutic potential of Indian medicinal plants with specific reference to women's health. This review addresses the lack of consolidated evidence by critically evaluating existing literature, identifying inconsistencies and outlining opportunities for future research and functional food development.

Methodology

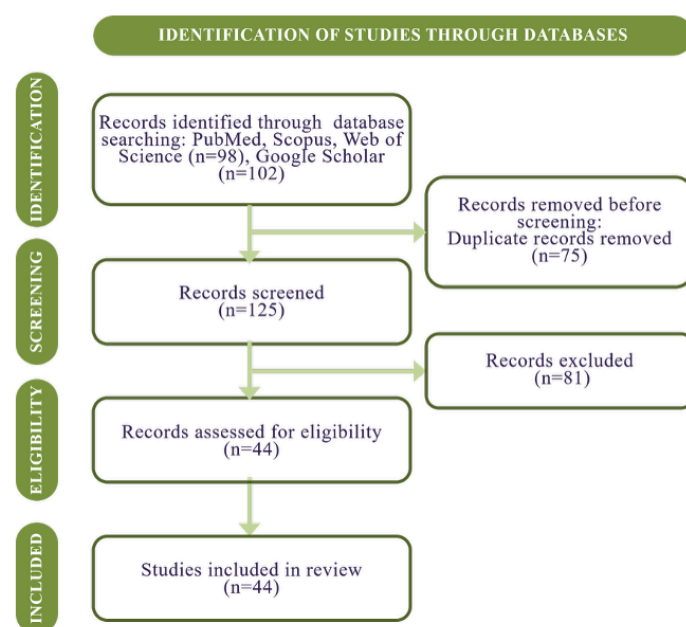
The review was conducted as a structured systematic literature review following PRISMA principles. Literature searches were performed in PubMed, Scopus, Web of Science and Google Scholar. The search included literature published between 2016 and 2026. Search terms were developed around four concepts: medicinal plants, phytochemicals, women's health and health outcomes. In PubMed, the search included combinations of terms such as ("medicinal plants" OR "medicinal herb" OR phytochemical OR "herbal medicine") AND ("women's health" OR female OR women) AND ("menstrual" OR reproductive OR hormonal OR menopause OR "polycystic ovary syndrome" OR anemia OR osteoporosis OR "bone health" OR metabolic). Editorials, letters, conference abstracts without sufficient methodological information, non-peer-reviewed material, duplicate publications, studies unrelated to medicinal plants or women's health, studies without relevant outcomes and publications for which the full text was unavailable were excluded. Studies involving general populations were excluded when women-specific outcomes could not be separately identified. The study selection process followed PRISMA guidelines: a total of 200 records were identified (98 from PubMed, Scopus and Web of Science and 102 from Google Scholar), of which 75 duplicates were removed, 125 titles and abstracts were screened and 44 full-text articles met the inclusion criteria and were included in the final synthesis.

A plant was considered for detailed synthesis when it (i) was repeatedly identified in the retrieved literature; (ii) had documented ethnomedicinal or traditional use in India; (iii) demonstrated nutritional, phytochemical, functional, or therapeutic relevance to at least one predefined women-specific health outcome; (iv) had evidence relating to reproductive, menstrual, hormonal, metabolic, hematological, skeletal, menopausal, lactation, or stress-related health; and (v) had sufficient published information to permit comparison of its botanical characteristics, bioactive constituents, functional properties, therapeutic applications and safety. Following application of these criteria and further consideration of the frequency and consistency of reporting across the eligible literature, eight plants were shortlisted for detailed synthesis: *ashwagandha* (*Withania somnifera* (L.) Dunal), *shatavari* (*Asparagus racemosus* Willd.), *moringa* (*Moringa oleifera* Lam.),

fenugreek (*Trigonella foenum-graecum* L.), *amla* (*Phyllanthus emblica* L.), *ashoka* (*Saraca asoca* (Roxb.) Willd.), *brahmi* (*Bacopa monnieri* (L.) Wettst.) and *vidarikand* (*Pueraria tuberosa* (Roxb. ex Willd.) DC.).

The methodological quality of eligible studies was assessed according to study design using validated critical appraisal tools. Randomized controlled trials were assessed using the Cochrane Risk of Bias 2 (RoB 2) tool, non-randomized studies using an appropriate risk-of-bias framework and animal studies using the SYRCLE risk-of-bias tool. For in vitro studies, methodological quality was evaluated using a predefined checklist covering experimental controls, replication, extract characterization, dose specification, outcome measurement and reporting completeness. The appraisal findings were incorporated into the interpretation of therapeutic evidence, with greater weight given to well-controlled human studies and cautious interpretation of findings derived from in vitro and animal models. Data were extracted using a predefined framework covering plant identity, plant part, preparation, study design, population/model, dose or concentration, intervention duration, comparator, outcome measures, major findings, limitations and safety observations.

Figure 1: PRISMA Flow Diagram For Systematic Review on Ethnomedicinal and Therapeutic Potential of Common Medicinal Plants For Women's Health



Results and Discussions

To provide structured insights, the findings from the selected studies were organized into various thematic sections: (i) botanical and ethnomedicinal profile of various medicinal plants, (ii) bioactive compounds and phytochemical profile of medicinal plants, (iii) functional and therapeutic benefits of medicinal plants in women's health, (iv) Evidence according to study design and (v) safety, adverse effects, contraindications, interactions and dosage considerations

Botanical and Ethnomedicinal Profile of Various Medicinal Plants

The medicinal flora of India encompasses a vast array of species that have been deeply integrated into the subcontinent's traditional health systems, notably Ayurveda, Siddha and folk medicine.

These systems view plants not simply as sources of isolated compounds but as holistic entities whose botanical structure and inherent phytochemical complexity contribute to human health (Table 2).

Asparagus racemosus Willd., widely known as *shatavari*, belongs to the family *Asparagaceae* and is characterized botanically as a perennial climber with slender, twining stems that can reach heights of up to 4 m. The root system is both fibrous and tuberous, serving as the primary repository for steroidal saponins, flavonoids and other bioactive compounds that underpin its medicinal efficacy (3). In Ayurveda, *shatavari* is heralded as a quintessential rasayana (rejuvenative tonic) and is traditionally prescribed to nourish the female reproductive system, balance hormones, support lactation and enhance vitality throughout a woman's life span, from puberty through menopause and beyond. Its Sanskrit name has been interpreted to mean "the one with a hundred husbands," reflecting traditional beliefs about its fertility-enhancing properties and modern clinical research continues to investigate its phytoestrogenic effects on menopausal symptoms and reproductive health outcomes (4,5).

Withania somnifera (L.) Dunal, commonly referred to as *ashwagandha*, is another quintessential Indian medicinal shrub belonging to the family *Solanaceae*. The plant's roots, leaves and fruits contain over 60 distinct bioactive metabolites, including withanolides, alkaloids, saponins and flavonoids, which contribute to its broad therapeutic spectrum. These structural features influence its traditional uses in Ayurvedic practice, *ashwagandha* is classified as a powerful rasayana and adaptogen, reputed to enhance physical strength, stamina and immune resilience while mitigating stress. Ethnomedicinally, it has been used to manage conditions ranging from general debility, anxiety and sleep disturbances to reproductive and endocrine disorders, reflecting its purported ability to modulate neuroendocrine pathways. *Ashwagandha*'s role in women's health traditionally extends to alleviating stress-related reproductive disruptions and general rejuvenation, though contemporary studies seek to substantiate these impacts with empirical data (6).

Moringa oleifera Lam., known in India as drumstick or *moringa*, is a fast-growing, drought-tolerant tree belonging to the family *Moringaceae*. Botanically, it is prized for its almost universal edibility: leaves, pods, flowers, seeds and even bark have culinary and medicinal applications (7). In Indian and other South Asian rural diets, *moringa* leaves and pods are consumed as vegetables to combat micronutrient deficiencies, particularly iron and calcium, which are of critical concern in women's health due to the high prevalence of anemia, bone demineralization and oxidative stress during reproductive and post-menopausal phases. Traditional uses of *moringa* in pregnancy and lactation are well documented in folk medicine, where its leaves are incorporated into soups, stews, or powdered supplements to enhance maternal nutrition (8).

Trigonella foenum-graecum L., commonly called fenugreek, is a member of the *Fabaceae* family and manifests as an annual herb with trifoliate leaves, small yellowish flowers and characteristic flat, oblong seed pods. The seeds are densely packed with soluble fiber, phytoestrogens and saponins, making them a staple in traditional diets and ethnomedicinal practices. Indigenous knowledge systems across India prescribe fenugreek for regulating menstrual cycles, enhancing lactation and supporting metabolic equilibrium uses that likely arose from observational

associations between its nutrient-dense seeds and improvements in energy, digestion and hormonal balance. Contemporary research continues to explore fenugreek's ethnopharmacological relevance to women's endocrine and metabolic health, linking traditional practice with biochemical mechanisms (9,10).

Phyllanthus emblica L., commonly known as *amla* or Indian gooseberry, belongs to the family *Phyllanthaceae* and is a medium-sized deciduous tree characterized by light grey exfoliating bark, feathery linear-oblong leaves, small greenish-yellow unisexual flowers and distinctive globose fruits with six vertical furrows. The fruit is exceptionally rich in vitamin C, polyphenols and tannins, which underpin its prominent role in traditional diets and ethnomedicinal systems. Indigenous practices recommend *amla* for managing anemia, menstrual irregularities, excessive menstrual bleeding and general debility, observations that likely stem from its nutrient density and rejuvenative properties. Contemporary ethnopharmacological research continues to validate these traditional uses, linking *amla*'s longstanding role in women's health to its antioxidant, hematinic and endocrine-supportive potential, thereby bridging traditional knowledge with modern scientific understanding (11,12).

Saraca asoca (Roxb.) Willd., commonly referred to as *ashoka*, is a medium-sized evergreen tree belonging to the family *Caesalpiniaceae*, historically revered in Ayurveda and often referred to as the "friend of women" due to its extensive use in managing gynecological disorders. Botanically, *ashoka* is characterized by pinnate leaves, fragrant orange-red flowers and flat black seed pods. Ethnomedicinally, it has been prescribed traditionally for menstrual irregularities, menorrhagia, leucorrhoea, dysfunctional uterine bleeding and related reproductive complaints, while also being used for digestive disorders, inflammation and blood purification in folk settings (13,14).

Bacopa monnieri (L.) Wettst., commonly referred to as *brahmi*, is a creeping perennial herb of the *Scrophulariaceae* family, widely distributed in wet, marshy habitats throughout the Indian subcontinent. It is botanically identified by its succulent oblong leaves, small white to purple flowers and creeping stems that thrive in aquatic or semi-aquatic conditions. In traditional Ayurvedic practice, *brahmi* is classified under medhya rasayanas, herbs believed to enhance memory, cognition and intellect. While its historical use extends to memory enhancement, anxiety reduction and cognitive support, contemporary research has expanded its ethnomedicinal relevance to include antioxidant, anti-inflammatory and neuroprotective functions, making it a frequently studied botanical for neurological and stress-related conditions (15,16).

Pueraria tuberosa (Roxb. ex Willd.) DC., commonly known as *vidarikand* or Indian kudzu and referred to in Sanskrit as *Bhukushmanda*, is a perennial climber of the *Fabaceae* family. It is distinguished by its large tuberous roots, trifoliate leaves and bluish-purple flowers; the tubers are especially valued in traditional medicine due to their high starch and phytochemical content. Ethnomedicinal texts and Ayurvedic practice describe *vidarikand* as a rasayana herb with tonic, adaptogenic, galactagogue and aphrodisiac properties. Traditionally, the tuber powder has been administered with milk to improve lactation in nursing mothers, to support general vitality and to strengthen reproductive and metabolic health (17).

Table 1: Nutritional and Phytochemical Composition of Selected Medicinal Plants

Component	<i>Ashwagandha</i> (<i>Withania somnifera</i> (L.) Dunal)	<i>Shatavari</i> (<i>Asparagus racemosus</i> Willd.)	<i>Moringa</i> (<i>Moringa oleifera</i> Lam.)	<i>Fenugreek</i> (<i>Trigonella foenum-graecum</i> L.)	<i>Amla</i> (<i>Phyllanthus emblica</i> L.)	<i>Ashoka</i> (<i>Saraca asoca</i> (Roxb.) Willd.)	<i>Brahmi</i> (<i>Bacopa monnieri</i> (L.) Wettst.)	<i>Vidarikand</i> (<i>Pueraria tuberosa</i> (Roxb. ex Willd.) DC.)
Moisture (%)	7.45 ^c	9.57 ^c	6.73 ± 0.21 ^a	6.83 ± 0.53 ^a	82.76 ± 1 ^a	Leaf: 8.08 ^c ; Flower: 10.44 ^c	13.9 ^c	4.98-6.61 ^b
Ash (g/100g)	4.41 ^c	3.55 ^c	7.92 ± 0.17 ^a	3.57 ± 0.48 ^a	2.3 ± 0.2 ^a	Leaf: 17 ^c ; Flower: 10 ^c	1.95 ^c	2.87-5.66 ^b
Protein (g/100g)	3.9 ^c	2.47 ^c	28.41 ± 1.16 ^a	28.45 ± 0.15 ^a	2.03 ± 0.2 ^a	Leaf: 8.43 ^c ; Flower: 6.81 ^c	13.5 ^c	10.9 ^c
Fat (g/100g)	0.30 ^c	0.11 ^c	5.21 ± 0.42 ^a	7.15 ± 0.25 ^a	0.28 ± 0.13 ^a	Leaf: 23.23 ^c ; Flower: 40.63 ^c	2.3 ^c	1.6 ^c
Crude fiber (g/100g)	32.3 ^c	2.5 ^c	8.72 ± 0.82 ^a	17.0 ± 0.2 ^a	5.1 ± 0.45 ^a	Leaf: 35.3 ^c ; Flower: 21 ^c	1.05 ^c	28.4 ^c
Carbohydrate (g/100g)	49.9 ^c	3.39 ^c	43.01 ± 0.89 ^a	13.40 ± 0.03 ^a	7.58 ± 1.27 ^a	Leaf: 9.69 ^c ; Flower: 7.59 ^c	68.3 ^c	64.6 ^c
Energy (kcal/100 g)	245 ^c	286.38 ^c	230.57 ^c	554.9 ^c	242.7 ^c	Leaf: 273.15 ^c ; Flower: 431.67 ^c	348 ^c	147 ^c
Vitamin C (mg/100g)	3.7 ^c	5.8 ^c	27.94 ± 0.24 ^a	12-43 ^b	573 ± 19 ^a	1-5 ^b	68 ^c	28 ^c
Iron	3.3 mg/100g ^c	2.17 mg/100g ^c	141.46 mg/Kg ^c	25.8 ± 1.2 mg/100g ^a	1.2 mg/100g ^c	Leaf: 17.06 ± 1.8 mg/100g ^a ; Flower: 4.76 ± 0.41 mg/100g ^a	13.8 mg/100g ^c	2.1 mg/100g ^c
Calcium	23 mg/100g ^c	26 mg/100g ^c	113.10 mg/Kg ^c	75.0 ± 9.0 mg/100g ^a	50 mg/100g ^c	Leaf: 3410 ± 2.37 mg/100g ^a	189 mg/100g ^c	72 mg/10g ^c
Total polyphenols	19.80 mg/100 g ^c	5.78 mg/100 g ^c	0.35 mg/100 g ^c	47.4 mg GAE/g ^c	730.15 mg GAE/g ^c	Leaf: 143.8 ± 15.98 mg/g ^a ; Flower: 91.86 ± 2.88 mg/g ^a	3.88-10.94 ± 0.33 mg GAE/g ^{a,b}	0.24-0.75% ^b
Total flavonoids	15.49 ± 1.02 mg CEQ/g ^a	58.22 ± 1.62 mg of QE/g ^a	0.33 mg/100 g ^c	12.135 ± 0.465 % ^a	161.83 mg QE/g ^c	Leaf: 519.16 ± 14 mg/g ^a ; Flower: 430 ± 26.27 mg/g ^a	1.05-6.83 ± 0.24 mg QE/g ^{a,b}	12.18-33.48 µg/mg ^b
Saponins	3.5% ^c	5.74 mg/g ^c	13.7% ^c	25.65 ± 0.65% ^a	1.1% ^c	Leaf: 1.3 ± 0.65% ^a ; Flower: 0.56 ± 0.15% ^a	2.03% ^c	8-14%
Alkaloids	0.26-0.31% ^b	2.93 mg/g ^c	2.96 mg ^c	1.8 ± 0.1% ^a	1833 mg AE/g ^c	Leaf: 0.66 ± 0.28 % ^a ; Flower: 0.07 ± 0.02% ^a	21.07-95.53 ± 3.56 mg UAE/g ^{a,b}	0.5% ^c
Antioxidant activity	67.16 % ^c	77.3 % ^c	16.24 µg/mL ^c	68 % ^c	67.02 ± 1.06% ^a	Leaf: 28.6 ± 0.62 µg/mL ^a ; Flower: 6.83 ± 0.07 µg/mL ^a	78.37- 87.21 ± 0.05 % ^{a,b}	86.05 µg/mg ^c
References	18	18	19	20	21	22	23, 24	25, 26

^a = Mean ± SD, ^b = Reported range (minimum–maximum), ^c = Single reported value

Bioactive Compounds and Phytochemical Profile of Medicinal Plants

Medicinal plants contain diverse bioactive compounds that extend beyond basic nutritional roles to exert profound biological activities, including antioxidant, anti-inflammatory, hormone-modulating and metabolic regulatory effects. These phytochemicals, primarily polyphenols, flavonoids, phytoestrogens, terpenoids, saponins and alkaloids, interact synergistically to influence health outcomes and disease risk, making them especially relevant for women's physiological and hormonal needs across life stages (Table 1).

Withania somnifera (L.) Dunal (*Ashwagandha*) possesses a unique phytochemical spectrum dominated by withanolides, saponins and alkaloid constituents. Withanolides, steroidal lactones structurally analogous to endogenous hormones, are primarily responsible for *ashwagandha*'s adaptogenic and endocrine-modulating properties. Phytochemical reviews highlight their role in reducing oxidative stress, modulating cortisol secretion and supporting neuroendocrine balance. These effects are particularly beneficial for women experiencing chronic stress, fatigue, or hormonal fluctuations during perimenopause and menopause (27).

Asparagus racemosus Willd. (*Shatavari*) is distinguished by its high content of steroidal saponins known as shatavarins (I-IV),

which structurally resemble endogenous steroid hormones. These compounds are considered central to *shatavari*'s reproductive and lactogenic effects, influencing estrogen-responsive tissues and supporting menstrual regularity and lactation. In addition to saponins, *shatavari* contains flavonoids, including quercetin and rutin glycosides, which enhance its antioxidant capacity and cellular protective effects. This combined phytochemical profile supports its traditional and emerging role in reproductive and menopausal health management (28).

Moringa oleifera Lam. (*Moringa*) is one of the most extensively profiled medicinal plants, with phytochemical analyses revealing the presence of over one hundred bioactive constituents distributed across its leaves, seeds and pods. These include high concentrations of polyphenols, flavonoids (quercetin, kaempferol and rutin), phenolic acids, glycosides and terpenoids. Comprehensive reviews indicate that *moringa*'s polyphenolic fraction contributes significantly to its antioxidant and anti-inflammatory activities, with demonstrated effects on lipid metabolism, glycemic regulation and immune modulation. These properties are particularly relevant for women during menopause, when oxidative stress and metabolic dysregulation are common (29).

Trigonella foenum-graecum L. (Fenugreek) seeds are characterized by a rich content of steroidal saponins, alkaloids, flavonoids and phenolic compounds. Diosgenin, a key steroidal saponin, has attracted attention for its phytoestrogen-like activity and role in modulating lipid and glucose metabolism. These phytochemicals contribute to fenugreek's documented benefits in improving insulin sensitivity and hormonal balance, supporting its use in women with PCOS and menopause-related metabolic disturbances (30).

Phyllanthus emblica L. (*Amla*) exhibits a distinctive phytochemical profile dominated by hydrolyzable tannins, phenolic acids, flavonoids and stabilized vitamin C complexes. Unlike many fruits, *amla* retains high antioxidant activity even after processing due to synergistic interactions between vitamin C and polyphenolic compounds such as gallic acid and ellagic acid derivatives. This unique phytochemical matrix enhances free-radical scavenging capacity and supports iron absorption, making *amla* especially valuable in addressing oxidative stress and anemia in women (12).

Saraca asoca (Roxb.) Willd. (*Ashoka*) is phytochemically distinguished by a rich spectrum of polyphenols, flavonoids, tannins, glycosides and sterols, which underpin its traditional use in women's reproductive health. The bark is the most extensively studied part and contains high concentrations of flavonoids such as quercetin, kaempferol, catechin and epicatechin, along with phenolic acids and condensed tannins. These compounds contribute to strong antioxidant and anti-inflammatory activities, which are relevant in managing menstrual disorders and uterine inflammation. Recent studies suggest that the synergistic interaction between flavonoids and tannins plays a role in modulating oxidative stress and vascular stability, supporting *ashoka*'s traditional application in menorrhagia and dysmenorrhea (13,14).

Bacopa monnieri (L.) Wettst. (*Brahmi*) possesses a distinctive phytochemical profile dominated by triterpenoid saponins, collectively known as bacosides, which are considered its principal bioactive constituents. In addition to saponins, *brahmi* contains alkaloids (brahmine, nicotine), flavonoids (luteolin, apigenin), phenolic acids and sterols, contributing to its antioxidant and neuroprotective properties. Recent phytochemical

analyses highlight the presence of polyphenols and glycosides that enhance free-radical scavenging and modulate inflammatory signaling pathways. While *brahmi* is primarily known for cognitive health, its antioxidant and adaptogenic phytochemicals are increasingly linked to stress reduction, hormonal balance and metabolic resilience in women, particularly during periods of psychological stress or aging (15,16).

Pueraria tuberosa (Roxb. ex Willd.) DC. (*Vidarikand*) is characterized by a phytochemical profile rich in isoflavonoids, flavonoids, phenolics and steroid-like compounds, which support its traditional classification as a rejuvenative and nutritive medicinal plant. The tubers contain prominent isoflavones such as puerarin, daidzein, genistein and tuberosin, compounds known for their phytoestrogenic activity. These isoflavones can interact with estrogen receptors, exerting mild estrogenic or anti-estrogenic effects depending on hormonal status, making them relevant for women's reproductive and menopausal health. Recent studies emphasize the role of *vidarikand*'s isoflavone-rich matrix in reducing oxidative stress, supporting bone health and improving endocrine balance, aligning with its traditional use in pregnancy, lactation and recovery from physical debility (17).

Functional and Therapeutic Benefits of Medicinal Plants in Women's Health

The quality assessment demonstrated substantial heterogeneity in the methodological strength of the available evidence. Clinical studies generally provided stronger evidence for women-specific outcomes than laboratory and animal investigations; however, the number of well-controlled clinical trials was limited and several studies were characterized by small sample sizes, short intervention periods, heterogeneous preparations and incomplete standardization of dosage and phytochemical composition. Preclinical studies provided useful mechanistic and toxicological information but were limited by the uncertainty of extrapolating experimental findings to human populations. In-vitro studies were particularly useful for identifying antioxidant, anti-inflammatory, antimicrobial or hormone-related mechanisms but could not independently establish clinical efficacy. Consequently, the therapeutic claims presented in this review were interpreted according to the methodological strength of the supporting evidence, with clinical outcomes given greater evidentiary weight than findings derived exclusively from animal or in-vitro models.

Functional and therapeutic benefits derived from medicinal plants arise from their combined nutritional and phytochemical composition, enabling multi-targeted biological effects. Indian medicinal plants have demonstrated roles in menstrual regulation, hormonal modulation, anemia, reproductive health, bone protection and stress management, making them particularly relevant for women's health across the life course (Table 2).

Menstrual regulation and hormonal balance are among the most prominent traditional applications of medicinal plants. Irregular menstruation, dysmenorrhea, premenstrual syndrome (PMS) and hormonal imbalance are common concerns among women of reproductive age. *Shatavari* is traditionally regarded as a female reproductive tonic, owing to its steroidal saponins (shatavarins), which exhibit phytoestrogen-like activity. Recent pharmacological studies suggest that *shatavari* may exert adaptogenic effects on the hypothalamic-pituitary-ovarian axis, helping to stabilize hormonal fluctuations and improve reproductive function (31). Fenugreek seeds have also been traditionally used to alleviate menstrual pain and regulate cycles, possibly through their phytoestrogenic and anti-inflammatory properties, which influence prostaglandin synthesis and smooth muscle relaxation

(32). Hormonal health is closely linked to stress physiology and chronic stress can disrupt menstrual cycles and reproductive hormones. *Ashwagandha* is widely recognized for its adaptogenic properties, primarily attributed to withanolides and alkaloids that regulate the hypothalamic-pituitary-adrenal (HPA) axis. Clinical studies indicate that *ashwagandha* supplementation can reduce cortisol levels, improve stress resilience and indirectly support hormonal balance in women experiencing stress-related menstrual irregularities (33). *Ashoka* is extensively used in treating menstrual irregularities in traditional medicine. The bark contains flavonoids, tannins and glycosides that exhibit uterotonic, anti-hemorrhagic and anti-inflammatory effects, making it effective in managing menorrhagia, dysmenorrhea and dysfunctional uterine bleeding. Recent pharmacological studies suggest that *ashoka*'s bioactives help regulate uterine muscle tone and modulate prostaglandin pathways, contributing to improved menstrual regularity and reduced excessive bleeding (34). *Vidarikand*, rich in isoflavones such as puerarin and daidzein, exhibits mild phytoestrogenic activity that supports hormonal equilibrium during reproductive and peri-menopausal phases (35).

Anemia and micronutrient deficiencies remain significant public health challenges among Indian women, particularly due to menstrual blood loss, inadequate dietary intake and increased demands during pregnancy. *Moringa* leaves are rich in non-heme iron, calcium and vitamin C, which collectively support hemoglobin synthesis and iron absorption. Community-based and experimental studies suggest that *moringa* supplementation improves hemoglobin levels and reduces fatigue in women and adolescent girls (36). Similarly, *amla* enhances iron absorption due to its high vitamin C and polyphenol content, reinforcing its traditional use in managing anemia and general weakness (11). *Ashoka* plays a supportive role in anemia management by reducing chronic menstrual blood loss and providing trace minerals such as iron and calcium. Its astringent tannins contribute to vascular stabilization, indirectly improving hematological status in women with menorrhagia (34). *Vidarikand* contributes essential minerals including iron, calcium, magnesium and potassium, supporting hemoglobin synthesis and overall micronutrient adequacy, particularly during pregnancy and lactation (35).

Reproductive and maternal health benefits of medicinal plants extend beyond hormonal regulation to include support during pregnancy and lactation. *Shatavari* has long been prescribed as a galactagogue in Ayurveda and emerging scientific evidence supports its role in enhancing milk secretion through prolactin modulation and mammary gland stimulation. Its immunomodulatory and antioxidant properties may further protect maternal health during the postpartum period. Fenugreek is also widely used to stimulate lactation and studies suggest that its bioactive compounds may influence mammary tissue development and milk production (37). *Ashoka* has bioactive compounds that help tone reproductive tissues and reduce inflammatory conditions of the uterus, reinforcing its use in gynecological formulations (34). *Vidarikand* is traditionally classified as a balya and rasayana, supporting fertility, fetal nourishment and post-partum recovery. Its carbohydrate-rich matrix combined with phytoestrogens supports energy metabolism and reproductive tissue regeneration during pregnancy and lactation (35). *Brahmi* supports reproductive health indirectly by modulating stress and neuroendocrine function, which are critical determinants of fertility and menstrual regularity (38).

Bone health is a critical concern for women, particularly during menopause when estrogen deficiency accelerates bone resorption

and increases osteoporosis risk. *Moringa oleifera* Lam. provides significant calcium, magnesium and phosphorus, which are essential for bone mineralization. Additionally, antioxidant polyphenols in *moringa* reduce oxidative stress, which has been implicated in osteoclast activation and bone loss. Fenugreek and *amla* also contain bioactives that may protect bone integrity by reducing inflammation and oxidative damage. Experimental studies suggest that phytoestrogenic compounds in *shatavari* may mimic estrogenic effects on bone tissue, offering a natural approach to mitigating postmenopausal bone loss (39). *Vidarikand* contributes calcium, magnesium and phytoestrogenic isoflavones that support bone mineral density, making it relevant for post-menopausal women at risk of osteoporosis. Experimental studies indicate that its isoflavones may reduce bone resorption by modulating estrogen-dependent pathways (35). *Ashoka*'s mineral content, particularly calcium and phosphorus, also supports skeletal health, while its anti-inflammatory compounds may reduce bone loss associated with chronic inflammation (34).

Stress-relieving and mood-stabilizing effects are particularly relevant in the context of modern lifestyles and hormonal transitions such as menopause. *Ashwagandha*'s anxiolytic and antidepressant properties, mediated through neurotransmitter modulation and antioxidant defense, have been validated in several clinical studies. These effects contribute to improved sleep quality, reduced anxiety and enhanced cognitive function, which collectively support mental well-being during reproductive transitions and aging (33). *Brahmi* is particularly notable for its adaptogenic and neuroprotective properties. Bacosides modulate neurotransmitter balance, reduce cortisol levels and improve cognitive resilience, which is especially beneficial for women experiencing stress-induced hormonal disturbances, anxiety, or mood fluctuations during menopause (38).

Ashwagandha and *shatavari* have comparatively greater human evidence, particularly for stress-related and menopausal outcomes and for lactation-related applications, respectively, whereas the evidence for *ashoka*, *brahmi* and *vidarikand* remain more strongly supported by traditional use and preclinical findings. *Moringa*, fenugreek and *amla* have substantial nutritional and phytochemical evidence, but women-specific clinical evidence remains less consistent than their broad pharmacological literature. For example, fenugreek has evidence related to glycemic regulation and lactation, while *moringa* provides a nutritionally relevant combination of iron, calcium and antioxidant compounds. Nevertheless, variation in plant material, preparation, dosage and study population limits direct comparison between studies. Similarly, the reported benefits of *shatavari* for menopausal symptoms and lactation are supported by recent controlled studies, but longer-term trials are required to establish sustained efficacy and safety (4,5,37).

Many reported antioxidant, anti-inflammatory, phytoestrogenic, endocrine-modulating and metabolic effects originate from in vitro experiments or animal models and therefore provide biological plausibility rather than confirmation of therapeutic efficacy in women. In addition, several studies evaluate isolated extracts or individual bioactive compounds rather than the whole plant or food-based preparation, limiting translation to practical dietary use. The available literature also provides inadequate information on bioavailability, dose-response relationships, long-term consumption, herb-drug interactions and standardized preparation. These limitations are particularly important when therapeutic claims are extended from traditional use or preclinical findings to specific women's health conditions.

Future research should therefore prioritize adequately powered women-specific randomized controlled trials using chemically characterized and standardized preparations. Studies should report plant part, extraction procedure, marker compounds, dose, intervention duration, comparator and clinically meaningful outcomes to improve reproducibility. Greater attention is also required to lifestage specific evidence, including adolescence,

reproductive age, pregnancy, lactation, perimenopause and postmenopause. Long-term safety, pharmacokinetics, bioavailability, herb-drug interactions and the effects of processing and food matrices should be systematically investigated before these plants can be confidently incorporated into therapeutic guidelines or widely marketed functional foods and nutraceuticals.

Table 2: Botanical, ethnomedical, therapeutic profile and applications of various medicinal plants relevant to women's health

Medicinal Plant	Botanical & Ethnomedicinal Profile	Functional & Therapeutic Benefits in Women's Health	Applications in Food, Nutraceutical & Pharmaceutical Products	References
<i>Ashwagandha</i> (<i>Withania somnifera</i> (L.) Dunal)	Shrub of <i>Solanaceae</i> family; roots used extensively in Ayurveda as an adaptogen and vitality enhancer.	Stress reduction, HPA-axis modulation, mood stabilization, endocrine balance, improved energy and muscle strength in women.	Capsules, stress-relief nutraceuticals, pharmaceutical extracts and formulations (Chyavanprash)	4,6
<i>Shatavari</i> (<i>Asparagus racemosus</i> Willd.)	Climbing plant of <i>Asparagaceae</i> family; roots traditionally used for female reproductive and maternal health.	Lactation enhancement, menstrual balance, menopausal symptom relief, bone and reproductive tissue support.	Nutraceutical powders, syrups, maternal health supplements, Ayurvedic pharmaceuticals (Chyavanprash)	4,6,28
<i>Moringa</i> (<i>Moringa oleifera</i> Lam.)	Fast-growing tree of <i>Moringaceae</i> family; leaves, pods and seeds used for anemia, malnutrition and general wellness	Anemia reduction, bone health, antioxidant protection, metabolic support during pregnancy and menopause.	Food fortification (leaf powder), functional foods, nutraceutical capsules, pharmaceutical supplements.	7,8,29, 30
Fenugreek (<i>Trigonella foenum-graecum</i> L.)	Annual herb of <i>Fabaceae</i> family; seeds traditionally used for glycemic control, lactation and menstrual health	Glycemic control, PCOS management, lactation support, lipid regulation, hormonal balance.	Functional foods, fortified flours, nutraceutical capsules, antidiabetic herbal formulations.	9, 10
<i>Amla</i> (<i>Phyllanthus emblica</i> L.)	Deciduous tree of <i>Phyllanthaceae</i> family; fruit used extensively in Ayurveda as a Rasayana for rejuvenation and immunity enhancement	Anemia support, antioxidant defense, immune enhancement, reproductive vitality, skin and hair health.	Functional foods (juices, preserves), nutraceutical powders/capsules, pharmaceutical formulations (Chyavanprash).	11
<i>Ashoka</i> (<i>Saraca asoca</i> (Roxb.) Willd.)	Evergreen tree of <i>Caesalpiniaceae</i> family; bark and flowers widely used in Ayurveda and folk medicine as a primary gynecological herb.	Menstrual regulation, reduction of menorrhagia and dysmenorrhea, uterine tonicity, anti-inflammatory and antioxidant support for reproductive tissues.	Gynecological nutraceuticals and pharmaceuticals (Ashokarishta, tablets, syrups); limited traditional beverages.	22, 34
<i>Brahmi</i> (<i>Bacopa monnieri</i> (L.) Wettst.)	Creeping perennial herb of <i>Scrophulariaceae</i> family; classified as Medhya Rasayana in Ayurveda; whole plant used for cognitive and stress-related conditions.	Stress relief, mood stabilization, cognitive support, antioxidant protection; indirect support of hormonal balance and menstrual regularity.	Functional beverages, herbal teas, cognitive nutraceuticals (capsules, syrups, gummies); herbal pharmaceuticals.	23, 24, 38
<i>Vidarikand</i> (<i>Pueraria tuberosa</i> (Roxb. ex Willd.) DC.)	Perennial climber of <i>Fabaceae</i> family with large tuberous roots; traditionally used as a nutritive tonic and Rasayana.	Reproductive vitality, lactation support, phytoestrogenic hormonal balance, bone health, postnatal recovery.	Tuber flour-based foods, rejuvenative nutraceutical tonics, fertility-support supplements.	25, 26, 35

Evidence according to study design

In vitro evidence

In vitro investigations provide important mechanistic evidence for the biological activities of the selected medicinal plants but should not be interpreted as evidence of clinical efficacy. Extracts of *moringa*, *amla*, *brahmi*, *ashoka* and *vidarikand* have demonstrated antioxidant, anti-inflammatory, antimicrobial or other bioactivities

in experimental systems, while phytochemicals such as polyphenols, flavonoids, saponins, withanolides and isoflavones provide plausible molecular bases for these effects. Such findings support further investigation of these plants in women's health but remain limited by differences in extraction procedures, concentrations, experimental models and biological endpoints. Consequently, antioxidant or hormone-modulating activity

observed in vitro should be considered preliminary and should not be directly equated with therapeutic benefit in women (13,17,29).

Animal evidence

Animal studies provide additional evidence regarding the physiological and pharmacological effects of medicinal plants, particularly where controlled investigation of reproductive, metabolic, endocrine, stress-related, or toxicological outcomes is possible. Preclinical evidence supports biological effects of *ashwagandha*, *shatavari*, *vidarikand*, *moringa* and other selected plants, including effects on stress responses, reproductive function, metabolism and oxidative stress. However, differences in species, dose, route of administration, extract composition and disease models limit direct extrapolation to humans. Animal evidence is therefore useful for establishing biological plausibility and identifying potential mechanisms, but therapeutic claims for women should remain cautious until supported by well-designed clinical studies. Toxicological investigations similarly provide preliminary safety information but cannot substitute for long-term human safety monitoring (6,40,41).

Clinical evidence

Clinical evidence is comparatively limited and unevenly distributed across the eight selected plants. The strongest recent human evidence in the reviewed literature is associated with *Asparagus racemosus*, for which randomized controlled studies have examined menopausal symptoms and postpartum lactation. A randomized, double-blind, placebo-controlled study reported favorable tolerability and potential benefit of standardized *shatavari* root extract for menopausal symptoms, while another controlled study evaluated its effect on postpartum lactation (4,5). Fenugreek also has human evidence related to glycemic regulation and lactation, although variation in preparations and clinical populations limits generalization (37,42). Evidence for *ashwagandha* supports its potential for stress-related and menopausal outcomes, but further women-specific trials with standardized preparations are required. For *ashoka*, *brahmi*, *vidarikand* and *amla*, the available literature is comparatively more dependent on traditional, phytochemical, or preclinical evidence than on robust women-specific randomized trials. Therefore, these plants should currently be regarded as promising candidates requiring further clinical validation rather than established therapeutic alternatives.

Safety, Adverse Effects, Contraindications, Interactions and Dosage Considerations

Safety evidence for the selected medicinal plants is encouraging in several cases but remains insufficient for assuming unrestricted use, particularly with concentrated extracts. *Shatavari* has demonstrated favorable short-term tolerability in a randomized study of perimenopausal women receiving 300 mg/day for 8 weeks, with mild events including loose stools, dizziness and nausea reported without treatment discontinuation or clinically important changes in routine safety markers (4). Preclinical toxicological evidence indicates a relatively wide safety margin for *ashwagandha* and *moringa*, although human long-term safety data remain comparatively limited (40,41). Fenugreek is generally well tolerated as a food, but concentrated or higher-dose preparations may increase the risk of hypoglycemia and allergic reactions, particularly in susceptible individuals (42). *Ashoka* preparations have been used in gynecological formulations, with reported extract doses of approximately 250-500 mg/day (34). Standardized *brahmi* preparations have generally been well tolerated at reported doses of approximately 300-450 mg/day,

although gastrointestinal effects may occur at higher exposure (38). Traditional *vidarikand* preparations have been used at approximately 3-6 g/day, while extract preparations of 250-500 mg/day have been reported; nevertheless, evidence supporting standardized therapeutic dosing remains limited (35).

Contraindications and herb-drug interactions

Potential contraindications and herb-drug interactions require particular attention when medicinal plants are consumed as concentrated supplements rather than as conventional foods. Fenugreek may potentiate glucose-lowering effects and therefore warrants caution in women receiving antidiabetic medication, while its potential allergenicity is relevant in individuals with legume allergies (42). *Shatavari* may have blood-pressure-lowering effects and should therefore be used cautiously with antihypertensive medicines. *Ashwagandha* may cause gastrointestinal symptoms, headache, or sedation and may have additive effects with central nervous system depressants. Rare reports of herb-induced liver injury further support caution in women with liver disease or those taking hepatotoxic medicines (4). *Brahmi* may similarly warrant caution when combined with sedative or anxiolytic medications because of possible additive effects on central nervous system activity (38).

Pregnancy and lactation

Pregnancy and lactation require a more conservative safety approach because pharmacologically active plant constituents may affect maternal physiology, the fetus, or the breastfed infant. *Ashoka* should be avoided during pregnancy because of its traditionally recognized uterotonic potential, whereas its postpartum use requires appropriate supervision (34). Although *shatavari* and fenugreek are traditionally used as galactagogues, available evidence does not establish the long-term safety of high-dose standardized extracts during pregnancy or lactation (5,37). *Moringa* is widely consumed as a food and has nutritional relevance during pregnancy and lactation, but safety data for concentrated preparations remain less established (43). For *ashwagandha*, *brahmi* and *vidarikand*, insufficient controlled human pregnancy data warrant avoidance of high-dose therapeutic extracts unless specifically advised by a qualified healthcare professional (44).

Conclusion

The present review indicates that the eight selected Indian medicinal plants *ashwagandha*, *shatavari*, *moringa*, fenugreek, *amla*, *ashoka*, *brahmi* and *vidarikand* possess nutritional, phytochemical and functional characteristics of potential relevance to women's health. Evidence is particularly promising for selected applications involving stress and menopausal symptoms with *ashwagandha*, lactation and menopausal outcomes with *shatavari*, nutritional support with *moringa* and *amla* and metabolic or lactation-related applications of fenugreek. However, the evidence base remains heterogeneous and the strength of support differs considerably among plants and health outcomes. Much of the literature consists of in vitro and animal investigations or generalized pharmacological studies, while well-designed women-specific clinical trials remain limited for several plants. Consequently, the presence of bioactive compounds or demonstration of preclinical activity should not be interpreted as proof of clinical efficacy. The practical application of these plants should therefore focus initially on evidence-supported food and nutraceutical uses, standardized preparations, appropriate quality control and clearly defined safety parameters rather than replacement of conventional medical treatment. Particular caution

is required with concentrated extracts, pregnancy and lactation, chronic disease, prescription medication use and potential herb-drug interactions. The major limitations of the current literature include heterogeneity in plant materials and preparations, inconsistent doses, limited long-term safety data, insufficient information on bioavailability and pharmacokinetics and inadequate women-specific clinical outcomes. Future research should prioritize standardized preparations, adequately powered randomized controlled trials, dose-response studies, long-term safety evaluation, herb-drug interaction studies and life-stage-specific research. Such evidence is necessary to determine whether the promising nutritional and therapeutic properties of these medicinal plants can be translated into reliable, safe and evidence-based interventions for women's health.

References

- Jiao, M., Liu, X., Ren, Y., Wang, Y., Cheng, L., Liang, Y., ... & Mei, Z. Comparison of herbal medicines used for women's menstruation diseases in different areas of the world. *Frontiers in Pharmacology*. February, 2022; 12, 751207. <https://doi.org/10.3389/fphar.2021.751207>
- Guzanic, J. 7 Linking food systems and evidence-based teaching kitchen through a gastronomic landscape: an example from central Europe. *BMJ Nutrition, Prevention & Health*. October, 2025; 8(2): A1-A21. <https://doi.org/10.1136/bmjnp-2025-nnedprosummit2024.7>
- Mahajan, S., Avad, P., & Langade, J. Efficacy and Safety of Shatavari (*Asparagus racemosus*) Root Extract for Perimenopause: Randomized, Double-Blind, Placebo-Controlled Study. *International Journal of Women's Health*. October, 2025; 17: 4057-4073. <https://doi.org/10.2147/IJWH.S544267>
- Ademola, J., Ajgaonkar, A., Debnath, T., Debnath, K., & Langade, J. Efficacy and safety of Shatavari root extract (*Asparagus racemosus*) for menopausal symptoms: a randomized, double-blind, three-arm, placebo-controlled study. *Frontiers in Reproductive Health*. November, 2025; 7, 1654503. <https://doi.org/10.3389/frph.2025.1654503>
- Ajgaonkar, A., Debnath, T., Bhatnagar, S., Debnath, K., & Langade, J. Shatavari (*Asparagus racemosus* Willd) root extract for postpartum lactation: A randomised, double-blind, placebo-controlled study. *Journal of Obstetrics and Gynaecology*. May, 2025; 45(1), 2564168. <https://doi.org/10.1080/01443615.2025.2564168>
- Paul, S., Chakraborty, S., Anand, U., Dey, S., Nandy, S., Ghorai, M., ... & Dey, A. Withania somnifera (L.) Dunal (Ashwagandha): A comprehensive review on ethnopharmacology, pharmacotherapeutics, biomedicinal and toxicological aspects. *Biomedicine & Pharmacotherapy*. November, 2021; 143, 112175. <https://doi.org/10.1016/j.biopha.2021.112175>
- Arshad, M. T., Maqsood, S., Ikram, A., & Gnedeka, K. T. Recent Perspectives on the Pharmacological, Nutraceutical, Functional and Therapeutic Properties of *Moringa oleifera* Plant. *Food Science & Nutrition*. April, 2025; 13(4), e70134. <https://doi.org/10.1002/fsn3.70134>
- Liu, R., Liu, J., Huang, Q., Liu, S., & Jiang, Y. *Moringa oleifera*: a systematic review of its botany, traditional uses, phytochemistry, pharmacology and toxicity. *Journal of Pharmacy and Pharmacology*. March, 2022; 74(3), 296-320. <https://doi.org/10.1093/jpp/rgab131>
- Abat, J. K., Kumar, S., & Mohanty, A. Ethnomedicinal, phytochemical and ethnopharmacological aspects of four medicinal plants of Malvaceae used in Indian traditional medicines: A review. *Medicines*. October, 2017; 4(4), 75. <https://doi.org/10.3390/medicines4040075>
- Bhat, K. M., Nagamma, T., & Konuri, A. Medicinal value of Phytoestrogens in *Trigonella foenum-graecum* L (Fenugreek)-Review. *Biomedical and Pharmacology Journal*. November, 2023; 16(4), 1885. <https://dx.doi.org/10.13005/bpj/2768>
- Gul, M., Liu, Z. W., Rabail, R., Faheem, F., Walayat, N., Nawaz, A., ... & Aadil, R. M. Functional and nutraceutical significance of amla (*Phyllanthus emblica* L.): A review. *Antioxidants*. April, 2022; 11(5), 816. <https://doi.org/10.3390/antiox11050816>
- Priyadarshini, R., & Chanda, L. S. Comparative Study of Antioxidant Properties in Indigenous Medicinal Plants of South India. *International Journal of Emerging Research in Science, Engineering and Management*. August, 2025; 1(2), 14-19. <https://doi.org/10.58482/ijersem.v1i2.3>
- Salvi, S., Varghese, R., Digholkar, G., Deshpande, A., Malvankar, C., Pawar, A., & Kumar, D. *Saraca asoca*: A scoping review on the phytoconstituents, bioactives and their therapeutic effects. *German Journal of Pharmaceuticals and Biomaterials*. October, 2022; 1(3), 3-13. <https://doi.org/10.5530/gjpb.2022.3.11>
- Scaria, A., Jayaraj, R., & Sudheesh, P. S. Comparative phytochemical profiling of different parts of *Saraca asoca*. *Materials Today: Proceedings*. 2026; 125, 230-235. <https://doi.org/10.1016/j.matpr.2023.11.083>
- Mittal, C., Mondal, M., & Chatterjee, S. A review: Phytochemistry and medicinal activities of *Bacopa monnieri*. *International Journal of Advanced Biochemistry Research*. January, 2025; 9(3): 550-555. <https://doi.org/10.33545/26174693.2025.v9.i3g.3996>
- Walker, E. A., & Pellegrini, M. V. *Bacopa monnieri*. StatPearls Publishing, Treasure Island. March, 2023; PMID: 36943953.
- Bharti, R., Chopra, B. S., Raut, S., & Khatri, N. *Pueraria tuberosa*: A review on traditional uses, pharmacology and phytochemistry. *Frontiers in pharmacology*. January, 2021; 11, 582506. <https://doi.org/10.3389/fphar.2020.582506>
- Kumari, S., & Gupta, A. Nutritional composition of dehydrated ashwagandha, shatavari and ginger root powder. *International Journal of Home Science*. September, 2016; 2(3), 68-70.
- Ntshambiwa, K. T., Seifu, E., & Mokhawa, G. Nutritional composition, bioactive components and antioxidant activity of *Moringa stenopetala* and *Moringa oleifera* leaves grown in Gaborone, Botswana. *Food Production, Processing and Nutrition*. March, 2023; 5(1), 7. <https://doi.org/10.1186/s43014-022-00124-x>
- Mahmood, N. M., & Yahya, K. I. Nutrient and phytochemical of fenugreek (*Trigonella foenum graecum*) seeds. *Int. J. Sci. Basic Appl. Res*. October, 2017; 36(3), 203-213.
- Kumar, D., & Sinha, A. Study of medicinal properties of *Phyllanthus emblica* L. and qualitative and quantitative phytochemicals analysis of fruit and seed of *Phyllanthus emblica* L. in Pandwa Block of Palamu District, Jharkhand, India. *International Quarterly Journal of Life Sciences*. November, 2024; 11 (3&4): 1233-1238. <https://doi.org/10.5281/zenodo.14969454>
- Suresh, M., & Pappuswamy, M. *Saraca asoca* (Roxb.) de Wilde, a sacred tree: Its nutritional value, elemental composition and anti-nutritional content. *Plant Science Today*. October, 2024; 11(4). <https://doi.org/10.14719/pst.3924>
- Monica, T., & Anisha, V. Nutritional analysis of paratha prepared from dehydrated brahmi (*Centella asiatica*).

- International Journal of Advances in Agricultural Science and Technology. November, 2018; 5(11), 6-15.
24. Nopparat, J., Sujipuli, K., Ratanasut, K., Weerawatanakorn, M., Prasarnpun, S., Thongbai, B., ... & Inthima, P. Exploring the excellence of commercial Brahmi products from Thai online markets: Unraveling phytochemical contents, antioxidant properties and DNA damage protection. *Heliyon*. January 2024; 10(2). <https://doi.org/10.1016/j.heliyon.2024.e24509>
25. Tiwari, A., Chaudhary, M. K., Misra, A., Ramesh, V., Sharma, R., Lale, S. K., ... & Srivastava, S. Chemical fingerprinting and quantification of bioactive metabolites in *Pueraria tuberosa* (Willd.) DC. and its marketed samples: Implications for quality control in herbal medicine: Quality control of Vidarikand in Indian market. *Indian Journal of Traditional Knowledge (IJTK)*. November, 2025; 24(11), 1074-1081. <https://doi.org/10.56042/ijtk.v24i11.14916>
26. Malviya, A., Gupta, R., & Porte, S. M. (2016). CRITICAL REVIEW ON VIDARIKAND (PUERARIA TUBEROSA DC.)-AN AYURVEDIC HERB. *International Journal of Ayurveda and Pharma Research*. February, 2016; 4(2), 46-52.
27. Gaurav, H., Yadav, D., Maurya, A., Yadav, H., Yadav, R., Shukla, A. C., ... & Palazon, J. Biodiversity, biochemical profiling and pharmaco-commercial applications of *Withania somnifera*: A review. *Molecules*. January, 2023; 28(3), 1208. <https://doi.org/10.3390/molecules28031208>
28. Singh, R., & Geetanjali. *Asparagus racemosus*: a review on its phytochemical and therapeutic potential. *Natural Product Research*. March, 2016; 30(17), 1896-1908. <https://doi.org/10.1080/14786419.2015.1092148>
29. Chiş, A., Noubissi, P. A., Pop, O. L., Mureşan, C. I., Fokam Tagne, M. A., Kamgang, R., ... & Suharoschi, R. Bioactive compounds in *Moringa oleifera*: mechanisms of action, focus on their anti-inflammatory properties. *Plants*. December, 2023; 13(1), 20. <https://doi.org/10.3390/plants13010020>
30. Pareek, A., Pant, M., Gupta, M. M., Kashania, P., Ratan, Y., Jain, V., ... & Chuturgoon, A. A. *Moringa oleifera*: An updated comprehensive review of its pharmacological activities, ethnomedicinal, phytopharmaceutical formulation, clinical, phytochemical and toxicological aspects. *International journal of molecular sciences*. January, 2023; 24(3), 2098. <https://doi.org/10.3390/ijms24032098>
31. Yadav, P., Yadav, S., Vedururu, S. S., & Kumari, G. (2025). A Standardized *Asparagus Racemosus* Root Extract Improves Hormonal Balance and Menstrual Health and Reduces Vasomotor Symptoms in Perimenopausal Women: A Randomized, Double-Blind, Placebo-Controlled Study. *Journal of the American Nutrition Association*. May, 2025; 44(8), 754-764. <https://doi.org/10.1080/27697061.2025.2510474>
32. Dhull, S. B., Bamal, P., Kumar, M., Bangar, S. P., Chawla, P., Singh, A., ... & Sihag, S. Fenugreek (*Trigonella foenum graecum*) gum: A functional ingredient with promising properties and applications in food and pharmaceuticals-A review. *Legume science*. September, 2023; 5(3), e176. <https://doi.org/10.1002/leg3.176>
33. Balkrishna, A., Kukreti, A., Sharma, N., Srivastava, D., & Arya, V. Efficacy and Safety of *Withania somnifera* (Ashwagandha) in the Management of Menopausal Symptoms. *Pharmacological Research-Natural Products*. March, 2026; 10, 100478. <https://doi.org/10.1016/j.prenap.2025.100478>
34. Nyeem, M. A. B., Haque, M. S., Haq, M. O., Nuruzzaman, M., Uddin, H., & Islam, B. R. Ashoka (*saraca indica*) as women friendly plant: a review. *National Journal of Advanced Research*, May, 2017; 3(2), 3-7.
35. Rathod, N. M., Kuchewar, V., & Pardhekar, A. A Comparative Analysis of Vidarikand Vati (*Pueraria Tuberosa* DC) and Ashwagandha Vati (*Withania Somnifera* Linn.) for Karshya (Underweight): A Randomised Controlled Trial Research Protocol. *Journal of Clinical & Diagnostic Research*. December, 2025; 19(12), JK05-JK08. <https://doi.org/10.7860/JCDR/2025/78162.22142>
36. Gopalakrishnan, L., Doriya, K., & Kumar, D. S. *Moringa oleifera*: A review on nutritive importance and its medicinal application. *Food science and human wellness*. June, 2016; 5(2), 49-56. <https://doi.org/10.1016/j.fshw.2016.04.001>
37. Rouhi, M., Hossieni, M. B., Khodaie, L., Mohammad-Alizadeh Charandabi, S., & Mirghafourvand, M. Investigating the Effectiveness of Fenugreek on the Quantity of Breast Milk and the Level of Prolactin in Mothers of Preterm Newborns: A Randomized Controlled Clinical Trial. *Current Drug Research Reviews*. January, 2025; 17(3), 471-480. <https://doi.org/10.2174/0125899775313919240822102906>
38. Devi, K. P., Ota, S., Pitta, S., Rana, R., Singha, R., Sharma, B. S., ... & Srikanth, N. Clinical Evaluation of Sukumara Ghitam and Brahmi Churnam in the Management of Menopausal Syndrome: A Prospective Open-Label Study. *Journal of Research in Ayurvedic Sciences*. March 2020; 4(1), 10-17. <https://doi.org/10.5005/jras-10064-0102>
39. Agidew, M. G. Phytochemical analysis of some selected traditional medicinal plants in Ethiopia. *Bulletin of the National Research Centre*. April, 2022; 46(1), 87. <https://doi.org/10.1186/s42269-022-00770-8>
40. Popoola, J. O., Aworunse, O. S., Oyesola, O. L., Akinola, O. O., & Obembe, O. O. A systematic review of pharmacological activities and safety of *Moringa oleifera*. *July, 2020; 9(3): 174-190*. <https://doi.org/10.34172/jhp.2020.24>
41. Kalaiselvan, K., Sweatha, V., Gayathri, V., Kalaivani, P., Siva, R., & Tamrakar, S. Reproductive and developmental safety assessment of Ashwagandha (*Withania somnifera*) root extract in Wistar rats. *Frontiers in Pharmacology*. June, 2025; 16, 1572025. <https://doi.org/10.3389/fphar.2025.1572025>
42. Shabil, M., Bushi, G., Bodige, P. K., Maradi, P. S., Patra, B. P., Padhi, B. K., & Khubchandani, J. Effect of fenugreek on hyperglycemia: a systematic review and meta-analysis. *Medicina*. January, 2023; 59(2), 248. <https://doi.org/10.3390/medicina59020248>
43. Amqam, H., Khuzaimah, A., Najamuddin, U., Ahmad, M., Muniroh, M., Marchianti, A. C. N., & Elias, S. M. *Moringa oleifera* Supplementation for Reducing Heavy Metal Toxicity and Oxidative Stress in Pregnant Women: Protocol for a Nonrandomized Trial Study. *JMIR Research Protocols*. October, 2025; 14(1), e73201. <https://doi.org/10.2196/73201>
44. Bernstein, N., Akram, M., Yaniv-Bachrach, Z., & Daniyal, M. Is it safe to consume traditional medicinal plants during pregnancy?. *Phytotherapy research*. April, 2021; 35(4), 1908-1924. <https://doi.org/10.1002/ptr.6935>
