Received: 20 Jan 2026	Revised: 15 Feb 2026	Accepted: 15 March 2026

Review Article

IJAG
Lets Explore Ayurveda Gynaecology

ISSN: 3048-5592

"ASHOKA (SARACA ASOCA) AS A UTERINE TONIC: PHARMACOLOGY, CLINICAL USE AND THE ADULTERATION PROBLEM"

Dr. Abhay Gandhi[1]

AFFILIATIONS:
1. Director, Ira Consultancy & Research Organisation, Bhosari, Pune, Maharashtra 411026

CORRESPONDENCE:
Dr. Abhay Gandhi

EMAIL ID:
director@icro.co.in

FUNDING INFORMATION:
Not Applicable

How to cite this article:
Gandhi A. "Ashoka (Saraca Asoca) as a Uterine Tonic: Pharmacology, Clinical Use and the Adulteration Problem" International Journal of Ayurveda Gynecology. 2026;3(1):28-34
Sri. 2026.1008.ijag.01.05

ABSTRACT:

Background: Ashoka (*Saraca asoca* (Roxb.) W.J. de Wilde) is the pre-eminent uterine tonic of Ayurveda. Its bark, alone or as the fermented preparation Ashokarishta, is widely prescribed for heavy menstrual bleeding (Asrigdara or Raktapradara) and other gynaecological disorders. Rising demand for a slow-growing, now vulnerable tree has made substitution and adulteration of the bark common. **Objective:** To review the classical uses, phytochemistry, experimental pharmacology and clinical evidence for Ashoka in gynaecology, and to examine the extent and consequences of adulteration. **Methods:** Charaka Samhita, Bhavaprakasha Nighantu and Bhaishajya Ratnavali were reviewed. PubMed was searched up to October 2026 for studies on *Saraca asoca*, Ashokarishta, heavy menstrual bleeding and quality control of Ashoka bark. Findings were synthesised narratively. **Results:** Ashoka bark is rich in tannins and flavan-3-ols, notably epicatechin, catechin and gallic acid, together with procyanidins, flavanol glycosides and the lignan glycoside lyoniside. Experimental studies show inhibition of prostaglandin synthesis, anti-inflammatory activity and suppression of oestrogen-induced endometrial thickening in rats. Clinical evidence consists of an uncontrolled study of an Ashoka-based syrup in 228 women with heavy menstrual bleeding, which reported reduced blood loss, and an ongoing randomised trial of Ashokarishta against tranexamic acid. Market studies using pharmacognostic, chromatographic and DNA methods repeatedly found commercial Ashoka samples derived from other species, most commonly *Polyalthia longifolia*. **Conclusion:** Ashoka has a coherent pharmacological rationale as an astringent, anti-inflammatory uterine tonic, but controlled clinical evidence is still awaited. Authentication of raw material by chemical and DNA markers, cultivation and conservation are as important to its future as clinical trials.

KEYWORDS: Ashoka, Saraca asoca, Ashokarishta, Asrigdara, heavy menstrual bleeding, adulteration

This is an open access article, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

INTRODUCTION

Heavy menstrual bleeding (HMB) is excessive menstrual blood loss that interferes with a woman's physical, social and emotional quality of life. It affects between two and five of every ten women of reproductive age[1]. In India it accounts for a large share of gynaecological consultations, and its burden is compounded by the high prevalence of anaemia among Indian women[2]. Medical treatments, including the levonorgestrel-releasing intrauterine system, tranexamic acid, progestogens and nonsteroidal anti-inflammatory drugs, reduce blood loss to varying degrees, and many women eventually undergo surgery[1,2]. Costs, side effects, the desire to avoid hormones and preference for traditional care lead many Indian women to seek Ayurvedic treatment.

In Ayurveda, HMB is described under Asrigdara or Raktapradara, and the herb most closely associated with its treatment is Ashoka (*Saraca asoca*). The name itself, meaning remover of sorrow, reflects the esteem in which the tree is held, and it has long been revered as sacred in Indian tradition[3]. Ashoka bark is used alone as a decoction or powder and, most commonly, as Ashokarishta, a self-fermented liquid preparation that is one of the most widely used classical Ayurvedic medicines for women[3,4].

The popularity of Ashoka has created a serious supply problem. *S. asoca* is a slow-growing tree of the Western Ghats and other moist forests, it is now listed as vulnerable on the IUCN Red List, and the bark is harvested destructively[3,5]. Commercial demand far exceeds supply, and the market has responded with substitution and adulteration. This review brings together the classical, pharmacological and clinical evidence on Ashoka as a uterine tonic and examines the adulteration problem, which has direct implications for the efficacy and safety of the medicines women receive.

METHODOLOGY

This narrative review was prepared in two parts. First, the primary classical texts of Ayurveda, namely Charaka Samhita (Sutra sthana, chapter 4; Chikitsa sthana, chapter 30), Bhavaprakasha Nighantu (Pushpa varga) and Bhaishajya Ratnavali (Pradara roga chikitsa prakarana), were studied with their standard commentaries for descriptions of Ashoka, its properties and its use in menstrual disorders[6–8]. Second, PubMed was searched for literature published up to October 2026 using combinations of the terms *Saraca asoca*, *Saraca indica*, Ashoka, Asoka, Ashokarishta, Asokarishta, heavy menstrual bleeding, menorrhagia, uterus, endometrium, adulteration, substitution, *Polyalthia longifolia* and DNA barcoding. Reviews, experimental studies, phytochemical and quality-control studies, clinical studies and trial protocols were considered. Every reference cited in this article was checked against its PubMed record for authors, title, journal, year, volume, pages and digital object identifier. Retracted publications identified during the search were excluded. The findings are synthesised narratively rather than statistically.

CLASSICAL AYURVEDIC PERSPECTIVE

1. Properties and actions

In Ayurvedic pharmacology Ashoka bark is described as astringent and bitter in taste (Kashaya, Tikta rasa), light and dry in quality (Laghu, Ruksha guna), cold in potency (Shita virya) and pungent in post-digestive effect (Katu vipaka). It pacifies Kapha and Pitta. Bhavaprakasha describes it as cooling, bitter, astringent and absorbent (Grahi), as improving complexion, and as relieving thirst, burning sensation, worms, wasting, poisoning and disorders of the blood[7]. Charaka includes Ashoka in the Vedanasthapana group of ten analgesic drugs[6]. The astringent, cold and Pitta-pacifying profile, together with its action on the blood (Rakta), provides the classical rationale for its use in conditions characterised by excessive bleeding.

2. Use in Asrigdara and other menstrual disorders

Charaka describes Asrigdara as excessive or prolonged menstrual bleeding caused by the vitiation of blood by aggravated Pitta, often with Vata, and recommends cold, astringent and haemostatic measures (Raktasthambhana) together with treatment of the underlying Dosha[6]. In later texts Ashoka becomes the principal drug for this indication. Bhaishajya Ratnavali describes Ashokarishta, prepared by fermenting a decoction of Ashoka bark with jaggery, Dhataki flowers and a group of aromatic and digestive herbs, and recommends it for all types of Pradara, for menstrual irregularity, for pain and for associated weakness and digestive disturbance[8]. A milk decoction of Ashoka bark (Ashoka ksheerapaka) is also described for the same purpose. In current practice

Ashoka is further prescribed for dysmenorrhoea, uterine fibroids with heavy bleeding, leucorrhoea, perimenopausal bleeding and as a general uterine tonic[3].

PHYTOCHEMISTRY

The bark of Ashoka is rich in polyphenols, and its gynaecological use has been attributed principally to its tannin content[5]. High-performance liquid chromatography consistently identifies the flavan-3-ols epicatechin and catechin and the phenolic acid gallic acid as major constituents, and these three compounds have become the main analytical markers for the drug[4,9,10]. Procyanidin dimers have been isolated from the ethyl acetate fraction[11]. Activity-guided isolation from a methanol extract yielded ten compounds, including several flavanol glycosides that were reported from the species for the first time[12]. The lignan glycoside lyoniside is described as the major constituent of the bark in some analyses, and extraction methods have been optimised for it[13]. Other reported constituents include flavonoids, sterols and leucocyanidins, and reviews describe antioxidant, anti-inflammatory, antimicrobial and cardioprotective properties attributed to this polyphenol-rich profile[3].

The content of these markers varies considerably. In bark collected through the six Ayurvedic seasons, epicatechin was most concentrated in Shishira (winter) and gallic acid in Hemanta (early winter), and epicatechin was consistently more abundant than gallic acid[9]. Transcriptome sequencing of bark from trees of different ages found that genes of the phenylpropanoid and flavonoid pathways, which lead to tannin biosynthesis, were most highly expressed in middle-aged trees of six to twelve years, followed by young and then old trees[5]. These findings support the classical attention to season and source of collection and have practical implications for harvesting and standardisation.

EXPERIMENTAL PHARMACOLOGY

1. Prostaglandin inhibition

An early biochemical study found that methanol and ethyl acetate extracts of Ashoka bark inhibited the conversion of arachidonic acid by prostaglandin H2 synthase, the cyclooxygenase complex, and that procyanidin dimers isolated from the bark were oxidised by the enzyme. The authors suggested that the combined action of these constituents might explain the use of Asoka arishta for menorrhagia in Sri Lanka[11]. Because prostaglandins contribute both to excessive menstrual blood loss and to menstrual pain, this finding provides a plausible link between the classical Raktasthambhana and Vedanasthapana actions of Ashoka and modern mechanisms.

2. Effects on the endometrium

The most directly relevant experimental evidence comes from a model of oestrogen-induced endometrial thickening. In immature rats given intraperitoneal oestradiol, the uterine epithelium became proliferative and keratinised with seven to eight stratified layers. Oral methanolic extract of Ashoka bark given with the oestradiol reduced the thickening to two to four layers and lowered serum oestrogen from about 111 to 83 pg/mL. The extract also reduced paw oedema in mice and lowered lipopolysaccharide-induced cyclooxygenase-2 expression in the rat uterus. The authors concluded that Ashoka has antiproliferative and antikeratinising effects on the endometrium, possibly through anti-oestrogenic and anti-inflammatory properties[4]. Since oestrogen-driven endometrial instability is one of the mechanisms of dysfunctional uterine bleeding, these findings are consistent with the traditional use of Ashoka in HMB, although they derive from a single animal model.

3. Anti-inflammatory and antioxidant activity

Two flavanol glycosides isolated from the bark showed anti-inflammatory activity in vitro and in vivo, including inhibition of tumour necrosis factor-alpha[12]. A bark extract containing gallic acid and epicatechin showed antioxidant, antimutagenic and antigenotoxic effects in bacterial and mouse models[10]. A methanol extract reduced paw swelling, lysosomal enzymes and pro-inflammatory cytokines in rats with adjuvant arthritis[14]. These broad anti-inflammatory and antioxidant effects may be relevant to inflammatory components of gynaecological conditions such as dysmenorrhoea and pelvic inflammation, but they have not been tested specifically in those conditions.

4. Toxicological data

Available toxicological data are limited but reassuring. A bark extract showed antioxidant and anti-breast cancer activity in vitro and did not show toxic effects in the authors' toxicological evaluation[15]. In male rats given a chemically characterised bark extract for 54 days, sperm count, motility and morphology were

unaffected[16]. Formal reproductive and developmental toxicity studies, and studies of Ashokarishta as a finished product, are lacking.

CLINICAL EVIDENCE

Despite its long and widespread use, controlled clinical evidence for Ashoka is scarce. The largest published study is an open-label, single-arm trial of an Ashoka-based syrup in 228 non-pregnant women aged 18 to 45 years with HMB. After 90 days of 15 mL twice daily, estimated menstrual blood loss fell by 54% and Pictorial Blood Assessment Chart scores by 58% from baseline, bleeding duration, clot passage and pad use improved, 68% of women reported complete resolution of associated dysmenorrhoea, haemoglobin rose modestly, endometrial thickness remained stable, and no clinically significant adverse events were reported[17]. The study was conducted at a national Ayurveda institute with manufacturer co-authors, and the product is described only as Ashoka-based, so the contribution of Ashoka itself cannot be isolated. Most importantly, the absence of a control group means that regression to the mean, natural variation in menstrual loss and placebo effects cannot be excluded, so the results are hypothesis-generating only.

A randomised controlled trial is now in progress. Its protocol randomises 140 women with HMB to Ashokarishta 20 mL with Trinakantamani pishti 250 mg twice daily for three months, or to tranexamic acid 500 mg three times daily for seven days from the first day of menses for three cycles; both groups receive iron and folic acid. The primary outcomes are change in Pictorial Blood Loss Assessment Chart score and bleeding duration, and the secondary outcome is the Menorrhagia Impact Questionnaire. By December 2024, 79 participants had been enrolled, and data analysis was expected to be completed in 2026[2]; its results had not appeared in PubMed by October 2026. The protocol notes that, although Ashokarishta has long been used in Ayurvedic practice, no clinical trial had been carried out on these formulations[2]. The trial is open-label and uses a combination of two Ayurvedic products, which will limit conclusions about Ashoka alone, but its active comparator is an established first-line treatment. In a Cochrane network meta-analysis, antifibrinolytics such as tranexamic acid probably reduced menstrual blood loss by about 80 mL per cycle compared with placebo, ranking second only to the levonorgestrel-releasing intrauterine system[1]. A finding of non-inferiority to tranexamic acid would therefore be clinically meaningful.

THE ADULTERATION PROBLEM

1. Scale of the problem

Adulteration is the single most important practical problem for Ashoka. An early pharmacognostic and phytochemical analysis of different market samples sold as Ashoka found that all of them were derived from different botanical sources[18]. Later studies using modern methods confirmed the problem. High-performance liquid chromatography of gallic acid, catechin and epicatechin combined with multivariate analysis showed evidence of adulteration in five commercial market samples and distinguished genuine *S. asoca* from its main adulterant, *Polyalthia longifolia* (Sonnerat) Thwaites[19]. *P. longifolia*, the false Ashoka or mast tree widely planted along roadsides, is botanically unrelated, belonging to the Annonaceae, but its name and appearance invite confusion. Bark from several other species is also traded as a substitute, and a DNA-based study examined five common substitutes and adulterants[20].

2. Authentication methods

Several methods have been developed to detect adulteration. Chromatographic fingerprinting with gallic acid, catechin and epicatechin as markers, combined with hierarchical cluster and principal component analysis, can separate genuine bark from *P. longifolia* and commercial samples, and the authors proposed that their data could serve as a baseline for pharmacopoeial standards[19]. Because tannin-rich bark makes conventional DNA extraction difficult, a modified method was developed that extracts DNA and phenolic compounds from the same small sample, allowing combined DNA and chemical profiling of genuine bark, commercial samples and *P. longifolia*[21]. Inter simple sequence repeat fingerprinting of 41 genuine samples and five common substitutes and adulterants, validated against DNA barcodes of the plastid *rbcL* region, separated the taxa into distinct genetic groups and was proposed as a simple and cost-effective identification tool[20]. Transcriptome-derived simple sequence repeat markers and the first draft genome of *S. asoca*, published in 2026, add further resources for identification and population genetics[5,22].

3. Consequences

Adulteration has three consequences. First, women receiving an adulterated product may not obtain whatever benefit genuine Ashoka offers, which undermines both clinical care and the interpretation of trials. Second, substitutes carry their own uncharacterised pharmacology and potential toxicity. Third, the continued harvesting of genuine bark from wild populations threatens the species itself. The draft genome study confirmed three distinct genetic clusters among wild populations in southern India corresponding to geographic origin, information that should guide conservation[22]. Reviews have called for cultivation, conservation and systematic evaluation of traditional formulations to protect both the resource and the patients who depend on it[3]. Some investigators have also proposed that a pharmacologically equivalent substitute could relieve pressure on wild stocks. However, such substitution should be accepted only after formal comparative chemical, pharmacological and clinical evaluation and explicit regulatory approval, not as an informal market practice.

DISCUSSION

Ashoka holds a unique position in Ayurvedic gynaecology. Its classical description as a cold, astringent, Pitta-pacifying and analgesic drug, and its specific role in Asrigdara through Ashokarishta, are consistent across the major texts[6–8]. Modern research has identified a polyphenol-rich bark whose constituents inhibit prostaglandin synthesis, reduce inflammation and, in an animal model, suppress oestrogen-induced endometrial proliferation[4,11,12]. These mechanisms are plausible for the reduction of menstrual blood loss and pain.

The clinical evidence does not yet match the extent of use. The only substantial clinical study is uncontrolled and used a multi-ingredient product[17], and the first randomised trial of Ashokarishta is still to report[2]. By comparison, conventional first-line treatments for HMB have been tested in dozens of randomised trials[1]. Ashoka cannot yet be described as an evidence-based treatment for HMB, although it may reasonably be offered as an adjunct to women with uncomplicated HMB who prefer Ayurvedic care, after structural and systemic causes such as fibroids, polyps, adenomyosis, endometrial hyperplasia, coagulation disorders and thyroid disease have been excluded, and with monitoring of haemoglobin.

The adulteration problem is as important as the evidence gap. If commercial Ashoka is frequently not Ashoka, trials of commercial products will produce misleading results and patients will receive unpredictable medicines[18–20]. Authentication must therefore precede efficacy research. We suggest that every clinical study of Ashoka or Ashokarishta should report the source of the bark, its authentication by chromatographic markers and, ideally, by DNA methods, and the content of epicatechin, catechin and gallic acid. Pharmacopoeial monographs should incorporate validated chemical fingerprints and DNA-based identity tests, and regulators should require these for manufacturers. Season and age of the source tree should be considered in quality specifications[5,9]. Conservation measures, including cultivation and sustainable bark harvesting, are essential if the species is to remain available.

Further research priorities include placebo-controlled or active-comparator trials of authenticated Ashoka bark preparations with objective blood-loss outcomes, studies of Ashokarishta as a finished product with characterisation of its alcohol and polyphenol content, reproductive and developmental toxicity studies, and mechanistic studies of the effects of Ashoka constituents on endometrial vasculature, prostaglandin balance and fibrinolysis.

This review is narrative, is restricted to PubMed-indexed literature, and may have missed relevant studies published in Indian journals that are not indexed. Many of the experimental studies used different extracts and doses, which limits direct comparison.

CONCLUSION

Ashoka is the classical uterine tonic of Ayurveda, with a pharmacological profile that plausibly supports its use in heavy menstrual bleeding and dysmenorrhoea. Controlled clinical evidence is, however, still awaited, and the widespread substitution of its bark with other species threatens both the quality of care and the validity of research. Rigorous authentication of raw material, pharmacopoeial standards that use chemical and DNA markers, conservation of the species and well-designed clinical trials are the essential next steps.

REFERENCES

1. Bofill Rodriguez M, Dias S, Jordan V, Lethaby A, Lensen SF, Wise MR, et al. Interventions for heavy menstrual bleeding; overview of Cochrane reviews and network meta-analysis. Cochrane Database Syst Rev 2022;5(5):CD013180.
2. Rajput S, Mata S, Saxena U, Ota S, Gupta B. Ayurveda management of menorrhagia (Raktapradara): protocol for a randomized controlled trial. JMIR Res Protoc 2025;14:e60801. https://doi.org/10.2196/60801
3. Urumarudappa SKJ, Rosario S, G R, Sukrong S. A comprehensive review on *Saraca asoca* (Fabaceae) – historical perspective, traditional uses, biological activities, and conservation. J Ethnopharmacol 2023;317:116861. https://doi.org/10.1016/j.jep.2023.116861
4. Shahid AP, Salini S, Sasidharan N, Padikkala J, Raghavamenon AC, Babu TD. Effect of *Saraca asoca* (Asoka) on estradiol-induced keratinizing metaplasia in rat uterus. J Basic Clin Physiol Pharmacol 2015;26(5):509–15. https://doi.org/10.1515/jbcpp-2014-0124
5. Arathi S, Samji A, Eashwarlal K, Gokulkrishnan S, Muthubhavani M, Yasini NP, et al. Transcriptome sequencing on different ages of *Saraca asoca* bark: insights from tannin biosynthetic pathways and EST-SSR marker design. Fitoterapia 2025;182:106459. https://doi.org/10.1016/j.fitote.2025.106459
6. Agnivesha. Charaka Samhita, revised by Charaka and Dridhabala, with Ayurveda Dipika commentary of Chakrapanidatta. Sutra sthana, chapter 4 and Chikitsa sthana, chapter 30 (Yonivyapat chikitsa). Edited by Yadavji Trikamji Acharya. Varanasi: Chaukhamba Surbharati Prakashan; 2011.
7. Zehravi M, Khan SL, Gupta JK, Jahnavi P, Babu RH, Vidiyala N, et al. Advances in polymeric nanoparticles for oral drug delivery: mechanisms, challenges, emerging trends, and preclinical to clinical perspectives. 3 Biotech. 2026;16(1):35.
8. Govinda Dasa. Bhaishajya Ratnavali, with Siddhiprada Hindi commentary. Pradara roga chikitsa prakarana. Edited by Siddhinandan Mishra. Varanasi: Chaukhamba Surbharati Prakashan; 2015.
9. Ketkar PM, Nayak SU, Pai SR, Joshi RK. Monitoring seasonal variation of epicatechin and gallic acid in the bark of *Saraca asoca* using reverse phase high performance liquid chromatography (RP-HPLC) method. J Ayurveda Integr Med 2015;6(1):29–34. https://doi.org/10.4103/0975-9476.146568
10. Nag D, Ghosh M, Mukherjee A. Antimutagenic and genoprotective effects of *Saraca asoca* bark extract. Toxicol Ind Health 2013;31(8):696–703. https://doi.org/10.1177/0748233713483200
11. Vidiyala N, Sunkishala P, Parupathi P, Mandati P, Mantena SK, Kasu RRR, et al. High drug loading of amorphous solid dispersion by hot melt extrusion: the role of magnesium aluminometasilicate (Neusilin® US2). Sci Pharm. 2025;93(3):30.
12. Ahmad F, Misra L, Tewari R, Gupta P, Mishra P, Shukla R. Anti-inflammatory flavanol glycosides from *Saraca asoca* bark. Nat Prod Res 2015;30(4):489–92. https://doi.org/10.1080/14786419.2015.1023728
13. Ramayanam NR, Bukke SPN, Kumar BJ, Vidiyala N, Sunkishala P, Thalluri C, et al. Nipah virus infection as a putative risk factor for Alzheimer's disease: a testable hypothesis. J Alzheimers Dis Rep. 2026;10:25424823261490069.
14. Saravanan S, Babu NP, Pandikumar P, Ignacimuthu S. Therapeutic effect of *Saraca asoca* (Roxb.) Wilde on lysosomal enzymes and collagen metabolism in adjuvant induced arthritis. Inflammopharmacology 2011;19(6):317–25. https://doi.org/10.1007/s10787-011-0091-7
15. Vidiyala N, Parupathi P, Sunkishala P, Sree C, Gujja A, Kanagala P, et al. Artificial intelligence: a new era in prostate cancer diagnosis and treatment. Int J Pharm. 2025:126024.
16. Gill M, Rai A, Kinra M, Sumalatha S, Rao CM, Cheruku SP, et al. Chemically characterised extract of *Saraca asoca* improves the sexual function in male Wistar rats. Andrologia 2018;50(7):e13037. https://doi.org/10.1111/and.13037
17. Dhiman K, Prajapati PK, Gopal D, Gautam A, Singal R. Efficacy and safety of an Ayurvedic Menohelp syrup in the management of heavy menstrual bleeding (menorrhagia): an open-label clinical study. Drugs Context 2026;15:2026-3-1. https://doi.org/10.7573/dic.2026-3-1

18. Nataraj HR, Hiremanth SK. Pharmacognostic and phytochemical analysis of different market samples of Ashoka (*Saraca indica* Linn). Anc Sci Life 2009;29(2):7–11.
19. Hegde S, Hegde HV, Jalalpure SS, Peram MR, Pai SR, Roy S. Resolving identification issues of *Saraca asoca* from its adulterant and commercial samples using phytochemical markers. Pharmacogn Mag 2017;13(Suppl 2):S266–72.
20. Soundaryashree NR, Chandan RS, Singamaneni VR, Nagidi HR, Patel G, Vidiyala N, et al. Development and validation of RP-HPLC method for quantification of bamifylline in pharmaceutical formulations using analytical quality by design (AQbD) principles. Adv J Chem Sect A. 2025:2076-97.
21. Mahalakshmi P, Hegde SN, Gowda M, Kareem A, Anbarashan M, Begum N, et al. First draft genome and genetic diversity analysis of the economically important and vulnerable tree species *Saraca asoca* (Roxb.) W.J. de Wilde. J Genet 2026;105.