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Review Article

Arjuna (*Terminalia Arjuna*): An Ayurvedic Hridya Drug with Contemporary Cardioprotective Potential

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A B S T R A C T

Arjuna is an important medicinal tree extensively used in Ayurveda, particularly for disorders of the heart and cardiovascular system. It is botanically identified as *Terminalia arjuna* Wight and Arn. and belongs to the family Combretaceae. The stem bark is the principal medicinally used part. According to Ayurvedic pharmacology, Arjuna possesses Kashaya Rasa, Laghu and Ruksha Guna, Katu Vipaka and predominantly Shita Virya, although some classical authorities describe it as Ushna. Its most distinctive action is Hridya, attributed to Prabhava. It is also described as Vranahara, Artighna, Bhagnasandhanakara, Raktapittahara, Medohara and Asthisandhanaka. Classical indications include Hridroga, Medoroga, Prameha, Trishna, Arti, Bhagna, Urakshata, Kshaya and Raktapitta. Important constituents include hydrolysable tannins, triterpenoid saponins, arjunolic acid, arjunic acid, ellagic acid, β-sitosterol and minerals. Experimental studies cited in the source suggest cardiotonic, antihyperlipidaemic, antioxidant, antihyperglycaemic, anti-inflammatory, immunomodulatory, antinociceptive and antimicrobial effects. This review presents the botanical identity, pharmacognosy, Ayurvedic properties, classical therapeutic uses, formulations, phytochemical profile and research evidence of Arjuna. Although its traditional and experimental profile is promising, standardized preparations and clinically rigorous studies are required to establish disease-specific efficacy and long-term safety.

Keywords: Arjuna, *Terminalia arjuna*, Hridya, Hridroga, Cardiotonic, Arjuna Kshirapaka, Ayurveda, Cardioprotection

Introduction

Arjuna is one of the most important Hridya Dravyas described in Ayurveda. Its bark has been traditionally used in different forms, including Churna, Kwatha, Kshirapaka, Ghrita and Arishta. Its therapeutic importance is primarily associated with Hridroga, but classical literature also recommends it in fractures, bleeding disorders, chest injury, wasting conditions, metabolic abnormalities and wounds.

The Ayurvedic action of Arjuna cannot be understood solely through its Kashaya Rasa, Ruksha Guna, Katu Vipaka and Shita Virya. Its specific beneficial action on the heart is attributed to Prabhava. This distinctive action has attracted

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contemporary scientific interest, particularly in relation to cardiotonic, antioxidant, antihyperlipidaemic and antihypertensive effects.

The present review compiles the classical, pharmacognostic, phytochemical and pharmacological information on Arjuna supplied in the source material.

Aim and Objectives

The aim of this review is to present a systematic account of Arjuna as an Ayurvedic medicinal drug.

The objectives are:

- To describe its botanical identity and morphology.
- To explain its Rasapanchaka, Doshakarma and Prabhava.
- To compile its classical indications and therapeutic administrations.
- To summarize its phytochemical constituents.
- To review reported pharmacological activities.
- To discuss safety issues, limitations and future research needs.

Botanical Identity

- **Botanical name:** *Terminalia arjuna* Wight and Arn.
- **Family:** Combretaceae
- **Kula:** Haritaki Kula
- **English name:** White Murdah
- **Principal part used:** Stem bark—Twak

The genus name *Terminalia* refers to the disposition of leaves near the ends of branchlets in some species. The specific epithet *arjuna* is derived from the Sanskrit name of the plant.

Table 1.Regional Names

Language	Name
Sanskrit	Arjuna, Kakubha, Dhavala, Nadisarja
English	White Murdah
Hindi	Arjan
Kannada	Bilimatti
Malayalam	Maruthu
Marathi	Anjan

Habitat and Distribution

Arjuna grows naturally in dense forests throughout India. It is often found near riverbanks and watercourses, which is reflected in the synonym Nadisarja. The tree can also be propagated successfully through seeds.

External Morphology

Arjuna is a large tree with a massive buttressed trunk and horizontally spreading branches.

Bark

The bark is smooth, grey and exfoliates in large flat pieces. The sapwood is reddish-white, whereas the heartwood is brown.

Leaves

The leaves are sub-opposite, 10–15 cm long and 4–7 cm wide. They are oblong or elliptic-oblong, obtuse or subacute, pale dull-green above and pale brown beneath. The base is rounded or cordate and often unequal-sided. One or two prominent glands are usually present near the top of the petiole.

Inflorescence and flowers

The inflorescence consists of short axillary spikes or terminal panicles. The flowers are sessile, with linear bracteoles shorter than the flowers.

Fruit

The fruit is a dark-brown, woody and fibrous drupe measuring approximately 2.5–5 cm in diameter. It possesses five prominent projecting wings.

Grahya Lakshana

The genuine medicinal bark occurs as flat or slightly curved stratified pieces measuring approximately 5–10 mm in thickness.

The outer surface is pink or flesh-coloured and may show a mealy coating. The inner surface is reddish-brown, finely striated and capable of peeling into thin flakes.

Its fracture is fibrous, odour is absent and taste is strongly astringent.

Adulterants

The source lists the following adulterants:

- *Terminalia alata*
- *Terminalia tomentosa*

Pharmacognostic authentication is therefore necessary before therapeutic use.

Classical Classification

Charaka

Arjuna is included in Udardaprashamana Varga.

Sushruta

It is included in:

- Nyagrodhadi Gana
- Salasaradi Gana

Bhavaprakasha Nighantu

It is described in Vatadi Varga.

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Etymology and Synonyms

The name Arjuna is interpreted as a substance that strengthens the heart and is useful in cardiac disorders.

Nadisarja

It commonly grows along riverbanks.

Dhavala and Shvetavaha

These names refer to the pale or whitish appearance of the bark.

Kakubha

The tree has a broad, spreading canopy and occupies a large area.

Hridrogavairi

The term means enemy of heart disease and indicates its principal therapeutic action.

Viravriksha and Indradru

These names signify potency and strong medicinal action.

Shwasaneshvara

This synonym indicates traditional utility in Shwasa.

Rasapanchaka

Table 2.Parameters and their descriptions

Parameter	Description
Rasa	Kashaya
Guna	Laghu and Ruksha
Vipaka	Katu
Virya	Predominantly Shita; Ushna according to Dhanvantari Nighantu
Prabhava	Hridya
Doshakarma	Kapha-Pitta Shamaka

Doshakarma

Arjuna pacifies Kapha because of Kashaya Rasa and Katu Vipaka. It pacifies Pitta through Kashaya Rasa and Shita Virya.

The source records a difference of opinion regarding Virya. Some classical descriptions identify Arjuna as Ushna, while others consider it Shita. The predominant therapeutic interpretation in the supplied material is Shita and Kapha-Pitta Shamaka.

Hridya Prabhava

The most important and distinctive action of Arjuna is Hridya.

This action is described as Prabhavajanya because it cannot be fully explained through its general Rasapanchaka alone. Its specific affinity for the heart forms the basis of its traditional use in Hridroga.

Arjuna is administered as Churna, Kwatha, Kshirapaka, Ghrita and fermented preparations. Milk-based preparations are particularly associated with nourishing and strengthening applications.

Principal Actions

Arjuna is described as:

- Hridya
- Vranahara
- Artighna
- Bhagnasandhanakara
- Asthisandhanaka
- Raktapittahara
- Medohara
- Kapha-Pitta Shamaka

The combination of Kashaya Rasa and Sandhana action explains its application in wounds, bleeding and fractures.

Therapeutic Indications

Arjuna is traditionally indicated in:

- Hridroga
- Medoroga
- Prameha
- Trishna
- Arti
- Bhagna
- Urakshata
- Kshaya
- Raktapitta
- Vrana
- Shukrameha
- Vyanga

Classical Therapeutic Applications

Hridroga

Arjuna and Godhuma are combined and cooked with oil, Ghrita, jaggery and milk. The preparation is described as beneficial in cardiac disorders.

Classical reference: Raja Nighantu, Pippalyadi Varga, Verse 26.

The formulation combines the Hridya property of Arjuna with nourishing substances.

Shukrameha

A decoction of Arjuna and Chandana is recommended in Shukrameha.

Classical reference: Bhavaprakasha Chikitsa 11/44.

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Vyanga

A paste prepared from Arjuna bark and honey is applied externally in Vyanga.

Classical reference: Ashtanga Hridaya, Uttara Sthana 32/16.

Bhagna

Powder of Arjuna, Laksha and Guggulu is mixed with Ghrita and administered internally to promote fracture union. The patient is advised to follow a milk-based diet.

Classical reference: Bhavaprakasha Chikitsa 48/29.

This use reflects the Bhagnasandhanakara and Asthisandhanaka actions of Arjuna.

Dose

The appropriate dose depends upon the formulation, patient strength, digestive capacity and disease condition.

Table 3.Dose preparation

Preparation	Dose
Kwatha	60–100 ml
Churna	3–6 g
Kshirapaka	20–30 ml

Phytochemical Constituents

The bark contains:

- Hydrolysable tannins, approximately 15%
- Triterpenoid saponins
- Arjunolic acid
- Arjunic acid
- Arjunine
- Arjunetin
- Ellagic acid
- β-sitosterol
- Calcium
- Magnesium
- Aluminium

Arjunic acid and arjunolic acid are among the most important triterpenoid constituents.

Reported Pharmacological Activities

The source attributes the following activities to Arjuna:

- Cardiotonic
- Antihypertensive
- Diuretic
- Antidysenteric
- Antihyperlipidaemic
- Antioxidant
- Antihyperglycaemic
- Anti-inflammatory
- Immunomodulatory
- Antinociceptive
- Antimicrobial
- Experimental antitumour activity

Cardiotonic Activity

An aqueous extract of Arjuna bark reportedly enhanced sarcoplasmic reticulum function in adult ventricular myocytes.

The cited experimental study suggested that the aqueous extract had a cardiotonic action with relatively less potential for producing arrhythmias. This finding provides a possible biomedical correlate for the classical Hridya Prabhava.

However, the experiment was not a clinical trial and does not establish Arjuna as a substitute for standard cardiovascular treatment.

Antihyperlipidaemic and Antioxidant Effects

Different fractions of Arjuna bark demonstrated antihyperlipidaemic and antioxidant effects in an animal model of induced hyperlipidaemia.

These findings may support the classical Medohara action. Nevertheless, the clinical effectiveness of different bark preparations requires further evaluation.

Antihyperglycaemic Activity

Methanolic leaf extract demonstrated antihyperglycaemic and antioxidant activity in streptozotocin-induced diabetic rats.

This is relevant to the classical indication of Prameha. However, the use of leaf extract in an animal model cannot be directly equated with the therapeutic effects of classical bark preparations.

Anti-inflammatory, Immunomodulatory and Antinociceptive Effects

Arjuna bark powder reduced formalin-induced paw oedema and showed anti-inflammatory, immunomodulatory and antinociceptive activity in experimental animals.

These findings may partly support its traditional use in Arti, wounds and tissue injury.

Antioxidant Action of Arjunic Acid

Arjunic acid demonstrated strong free-radical scavenging activity in multiple laboratory assays. It reportedly reduced lipid peroxidation and protected red blood cells against oxidative haemolysis.

These findings indicate that antioxidant activity may contribute to the broader tissue-protective effects of Arjuna.

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Antimicrobial Activity

Methanolic, ethanolic, acetone and aqueous extracts prepared from Arjuna leaves and bark were tested against bacterial pathogens associated with ear infections.

The extracts demonstrated activity particularly against *Staphylococcus aureus*. This provides experimental evidence of antimicrobial potential but does not establish clinical efficacy in ear infections.

Experimental Antitumour Activity

Methanolic leaf extract demonstrated activity against Ehrlich ascites carcinoma in mice.

This result is preliminary and preclinical. It should not be interpreted as evidence that Arjuna can treat cancer in humans.

Important Formulations

Table 4.Traditional Ayurvedic Formulations of Arjuna and Their Indications

Formulation	Traditional indication
Arjuna Ghrita	Sarva Hridroga
Arjuna Twak Churna	Hridroga
Arjunadi Siddha Kshira	Hridroga
Parthadyarishta	Hridroga and Phupphusa Roga
Arjunadi Taila	Prameha
Kakubhadi Vati	Yakshma and Kasa
Sarivadi Vati	Karna Roga and Hridroga
Kakubhadi Churna	Hridroga and Raktapitta

Clinical Interpretation

The strongest traditional indication of Arjuna is Hridroga. However, Hridroga is a broad Ayurvedic term and should not be equated with one specific modern cardiovascular diagnosis.

The form of administration may also influence its effect:

- Churna provides the powdered bark in its crude form.
- Kwatha extracts water-soluble components.
- Kshirapaka combines the bark with milk and may be more suitable where nourishment and strengthening are desired.
- Arishta provides a fermented preparation.
- Ghrita may be selected according to the clinical condition and associated Dosha involvement.

Its application should therefore be based on Ayurvedic assessment rather than the isolated presence of a biomedical diagnosis.

Safety Considerations

Arjuna is widely used in traditional practice, but the following points require attention:

- Patients receiving cardiac medicines should not discontinue prescribed treatment.
- Professional monitoring may be required when Arjuna is used with antihypertensive, antidiabetic or cardiac drugs.
- Bark should be botanically authenticated.
- Experimental extract doses should not be directly converted into human doses.
- The long-term safety of concentrated extracts requires further study.
- The preparation, dose and Anupana should be selected according to the individual patient.

Limitations of Existing Evidence

The supplied scientific evidence is limited by:

- Predominance of animal and cell-based studies
- Use of different plant parts
- Variation in extraction methods
- Limited standardization of active constituents
- Lack of adequate long-term clinical trials
- Limited information on herb–drug interactions
- Differences between classical formulations and laboratory extracts

The findings are encouraging but remain insufficient for definitive therapeutic claims.

Future Research Directions

Future studies should examine:

- Standardization of Arjuna bark and its formulations.
- Comparative evaluation of Kwatha, Churna and Kshirapaka.
- Clinical trials in clearly defined cardiovascular disorders.
- Effects on lipid parameters and metabolic syndrome.
- Adjunctive use in stable cardiac disease.
- Role in fracture healing.
- Long-term safety and pharmacovigilance.
- Herb–drug interactions.
- Pharmacokinetics of arjunic and arjunolic acids.
- Sustainable harvesting of bark.
- Differentiation from adulterant *Terminalia* species.
- Correlation between Ayurvedic patient characteristics and clinical outcomes.

Conclusion

Arjuna is one of the foremost Hridya drugs of Ayurveda. Its Kashaya Rasa, Laghu–Ruksha Guna, Katu Vipaka and predominantly Shita Virya contribute to its Kapha-Pitta

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Shamaka, Medohara, Vranahara and Raktapittahara actions. Its specific effect on the heart is attributed to Prabhava.

Classical literature recommends Arjuna in Hridroga, Prameha, Medoroga, Bhagna, Urakshata, Kshaya, and Raktapitta. Experimental research suggests cardiotonic, antioxidant, antihyperlipidaemic, antihyperglycaemic, anti-inflammatory, immunomodulatory and antimicrobial potential.

Despite promising findings, the majority of available evidence remains preclinical. Arjuna should therefore be used as an individualized Ayurvedic medicine under appropriate professional supervision. Standardized preparations, rigorous clinical trials, and long-term safety studies are necessary to establish its role in specific cardiovascular and musculoskeletal conditions.

References

1. Bhavamishra. *Bhavaprakasha Nighantu*. Vatadi Varga, Verses 26–27. https://www.ijhsr.org/IJHSR_Vol.12_Issue.10_Oct2022/IJHSR14.pdf
2. *Raja Nighantu*. Pippalyadi Varga, Verse 26. Use of Arjuna in Hridroga. https://ayush.gov.in/assets/pdf/quality_standards/guduchi_Book-Dossier.pdf
3. Bhavamishra. *Bhavaprakasha Chikitsa*. Chapter 11, Verse 44. Use of Arjuna and Chandana in Shukrameha. https://ijrap.net/admin/php/uploads/2994_pdf.pdf
4. Vagbhata. *Ashtanga Hridaya*. Uttara Sthana, Chapter 32, Verse 16. External use of Arjuna bark in Vyanga. https://www.easyayurveda.com/ashtanga-hridayam-uttara-sthanam-chapter-32-kshudra-roga-pratishedham-treatment-of-minor-diseases/
5. Bhavamishra. *Bhavaprakasha Chikitsa*. Chapter 48, Verse 29. Arjuna, Laksha and Guggulu in Bhagna. https://ijrap.net/admin/php/uploads/2994_pdf.pdf
6. Aneja KR, Sharma C, Joshi R. Antimicrobial activity of *Terminalia arjuna* Wight & Arn. against pathogens causing ear infection. *Brazilian Journal of Otorhinolaryngology*. 2012;78(1):68–74. [Google Scholar]
7. Biswas M, Bhattacharya S, Ghosh AK, Kumar RB, Bera S, Gupta M, Haldar PK. Antitumour activity of *Terminalia arjuna* leaf against Ehrlich ascites carcinoma in mice. *Natural Product Research*. 2011. [Google Scholar]
8. Subramaniam S, Ramachandran S, Uthrapathi S, Gnamanickam VR, Dubey GP. Antihyperlipidaemic and antioxidant potential of different fractions of *Terminalia arjuna* bark. *Indian Journal of Experimental Biology*. 2011;49(4):282–288. [Google Scholar]
9. Oberoi L, Akiyama T, Lee KH, Liu SJ. Aqueous extract of *Terminalia arjuna* bark exerts cardiotonic effects on adult ventricular myocytes. *Phytomedicine*. 2011;18(4):259–265. [Google Scholar]
10. Biswas M, Kar B, Bhattacharya S, Kumar RB, Ghosh AK, Haldar PK. Antihyperglycaemic activity and antioxidant role of *Terminalia arjuna* leaf in streptozotocin-induced diabetic rats. *Pharmaceutical Biology*. 2011;49(4):335–340. [Google Scholar]
11. Halder S, Bharal N, Mediratta PK, Kaur I, Sharma KK. Anti-inflammatory, immunomodulatory and antinociceptive activity of *Terminalia arjuna* bark powder. *Indian Journal of Experimental Biology*. 2009;47(7):577–583. [Google Scholar]
12. Sun FY, Chen XP, Wang JH, Qin HL, Yang SR, Du GH. Arjunic acid, a strong free-radical scavenger from *Terminalia arjuna*. *American Journal of Chinese Medicine*. 2008;36(1):197–207. [Google Scholar]

ISSN: 2394-6547
DOI: https://doi.org/10.24321/2394.6547.202210