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Review Article

Cardio Tonic Property

A Critical Review on Cardio Tonic Property of Karveera (Nerium indicum/Thevetia Peruviana)

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Karveer/ Peet Karveer also known as Kaner or Oleander is a poisonous plant found commonly in North and Central India. It is an evergreen shrub which bears flowers of different colors from different varieties such as yellow, pink, white and red. Common species found of Karveer are Nerium indicum, Thevetia neriifolia/Thevetia peruviana, Nerium oleander. In many Ayurvedic texts, Karveer is classified as poisonous plant but along with the same it also has many medicinal properties. It is used in skin disorders, alopecia and wound healing and eye disorders. Beside that it also has cardio tonic property in very less doses. In this article focus will be on the cardiac property of both varieties of Karveer.

Keywords: Cardio tonic, Karveer, Kaner, Nerium Indicum

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Introduction

In the world of medicine, *Ayurveda* have always been the richest source of plant based medicine along with the vast knowledge of health system in terms of prevention and cure. As per *Ayurveda*, every single thing on this earth can be used as medicine. Even the poisonous plants can be used as medicine if used in proper way and dose.

Karveer is classified as *Upvisha* as per *Sushruta Samhita* of *Ayurveda*. Being in *Visha* category, this plant still holds lot of medicinal properties and is being used in treatment of various diseases such as *Kustharoga* (Skin diseases), *Bhagandara* (Fistula), *Netra Roga* (Eye disease), *Ashmari* (kidney stones) etc. Due to presence of Peruvoside and cardenolides in this plant, it also exhibit cardio tonic activity such as of digitalis in very less dose. For this property it is used sometimes in *Hrudya Daurbalya* (heart failure).**[1-4]**

It comes in two varieties one is *Nerium indicum* commonly known as Oleander and other is *Thevetia neriifolia/Thevetia peruviana* commonly known as yellow oleander. They both are potent source of cardiac glycosides.**[5]**

Materials and Methods

Study Design

This is a narrative literature review focusing on the cardio tonic and pharmacological properties of *Nerium indicum* (Karveer) and *Thevetia peruviana* (*Peet Karveer*) based on classical *Ayurvedic* texts and modern biomedical research.

Source of Data

Classical Ayurvedic texts:

- *Charaka Samhita*
- *Sushruta Samhita*
- *Bhavaprakasha Nighantu*
- *Sharangadhara Samhita*
- *Ayurvedic Formulary of India (AFI)*
- *Sahasrayogam*

Modern scientific sources:

- PubMed Central (PMC)
- Google Scholar
- Scopus
- Ayurveda - specific journals (e.g., AYU, IJAMS, AYUSHDHARA etc.)

Botanical Description

Karveer/ Peet Karveer are a large evergreen shrub or small tree with around 10-12 feet of height and belong to Apocynaceae family. The stem contains milky juice. It has dark green color linear - lanceolate leaves, 4-6 inches long and 1 inch wide. Flowers are fragrant, bears different color as per varieties such as *Nerium indicum* have pink and white flowers, *Thevetia neriifolia/Thevetia peruviana* have yellow flowers. Fruit is cylindrical in shape, around 5-7inches long with hard follicles and contains small round brown color seeds.**[6]**

Varieties and Chemical composition

As per *Ayurvedic Samhitas* and *Nighantus*, there are two varieties of *Karveer*

***1. Nerium indicum* -** It is of two types, one with red/pink flowers and other with white flowers. It has chemical components such as glycosides as of Neriodorin, Neriodorein, Karabin, Oleandrin, Rutin, β - D Digitaloside, Digitoxigenin etc. These are structurally similar to **digoxin**, a well-known cardiotonic drug.**[7]**

***2. Thevetia peruviana/ Thevetia neriifolia* -** It has yellow flowers. It contains chemical constituents such as Peruvoside, Peruvosidic acid, Ruvoside, Neriifolin, Cerebin etc.**[8]**

***Ras Panchak*[9]**

Nerium indicum (Karveer)

- *Rasa - Katu Tikta*
- *Guna - Laghu, Ruksha*
- *Virya - Ushna*
- *Vipaka - Katu*
- *Karma - Kapha-Vatahara, Kusthghana, Vranahara, Chakshushya*

Thevetia peruviana

- *Rasa - Tikta, Kashaya, Madhur*
- *Guna - Laghu, Snigdha*
- *Virya - Sheeta*
- *Vipaka - Madhur*
- *Prabhava - Hrudya*
- *Karma - Vata-Pitta Shaman, Shothahara*

Cardio tonic Property of *Karveer*

Leaves and flowers of *Nerium indicum* inherits properties like cardio tonic, diaphoretic, diuretic, anticancer, antibacterial, anti-fungal, anti microbial. Leaves and flowers of *Thevetia peruviana* shows medicinal properties such as anti-bacterial, anti-cancerous, anti-spermatogenetic, anti-diarrhoeal, anti-microbial, cardio tonic etc. Both varieties have almost same ethno-medicinal properties and both have cardio tonic effect too.**[10]**

Charaka Samhita and *Bhavaprakasha Nighantu* describes *Karveer* as *Hrudya* (Cardiac tonic), *Shothahara* (Anti-inflammatory), *Krimighna* (Anthelmintic), *Kaphahara* (Removes phlegm/*Kapha* in channels) after *Shodhana*.**[11-12]**

While *Acharya Sushruta* does not directly indicates *Karveer* as *Hrudya* but his classification do say that it is *Krimighna* (antimicrobial/anti-toxic) *Shothahara* (anti-inflammatory) *Lekhana* (scraping effect - clears blocked channels).**[13]**

These actions indirectly support heart, especially in diseases involving *Kapha* accumulation, fluid retention (edema), and toxin-induced circulatory issues. In *Uttara Tantra*, *Sushruta* discusses *Shotha Chikitsa* which often occurs due to cardiac diseases. *Karveer*, being *Kapha-Vatahara* and *Deepana*, is likely used in compound formulations to improve circulation, reduce fluid retention, and thus relieve cardiac load.**[14]**

As per *Acharya* Priyavrat Sharma, *Nerium indicum/ Thevetia peruviana* have the same effects as that of digitalis on heart. Because of this reason it is cardio tonic/ cardio stimulant in very minimum amount. Indications of *Karveer* in case of heart failure are cardiac asthma, inflammation, severe weakness. As *Karveer* is a poisonous plant, it is fatal to heart if given in higher doses. The usual dose for the same is 2-3mg in powder form.**[15]**

Cardiac Glycosides Mechanism:[16]

- Inhibit Na^+/K^+-ATPase enzyme in cardiac muscle cells.
- Increases intracellular calcium, enhancing myocardial contractility (positive inotropic effect).
- This makes them useful in congestive heart failure and arrhythmias - though therapeutic index is narrow.

Ayurvedic Applications in Cardiac Disorders

Table 1:

Ayurvedic Diagnosis	Modern Correlation	Role of Karveer
Hridroga (Heart disease)	Congestive heart failure	Enhances cardiac contractility (via glycosides)
Shotha (Edema)	Cardiac edema or dropsy	Diuretic, removes fluid accumulation
Swasa/Kasa (Breath disorders)	CHF-related dyspnea	Clears congestion, supports cardiac output
Krimi (Parasites/toxins)	Toxin-related inflammation	Detoxifying action on blood and tissue

Clinical Evidence for use of *Karveer* as Cardio tonic

- **Adome et al. (2003)** examined cardiostimulatory eff. of crude ethanolic *oleander* leaf extract on isolated guinea-pig hearts. They observed dose-dependent increases in force of contraction, heart rate & cardiac output which is of same as of digoxin. Pig-heart model in which heartbeat was increased from 28 to 41beat/min, Blood flow increased from 0.4 to 1.9l/min and contraction amplitude from 22 to 49mm.**[17]**
- Early pharmacological studies from the 1970s says that the Tincture of *Karveer* have potent cardio tonic effects and relief of cor pulmonale symptoms, aligning with *Ayurvedic.***[18]**
- Aclinical study on congestive heart failure patients using *Karveer tincture* observed improvements in respiratory symptoms and cardiac regulation, although detailed outcomes were not always published.

These provide rigorous preclinical evidence for positive inotropic effects, supporting traditional use.

Classical Formulation Used in Heart Diseases

- *Karveeradi Vati* - used for cardiac conditions and *Kapha* disorders.**[19]**
- *Karviradi Kashayam* - Used in chronic cough, edema, and cardiac weakness.**[20]**
- *Nimba Karviradi Taila* - External application for skin and vascular conditions, but indirectly supports circulation.**[21]**

Discussion

Present review integrates classical *Āyurvedic* descriptions with modern experimental & clinical data to evaluate cardio tonic potential of 2 principal *Karveer* species - *Nerium indicum* & *Thevetia peruviana*.

Classical texts consistently attribute to properties of *Karveer* like *Hṛidya*, *Śhothahara*, *Krimighna*, *Lekhana* and *Kapha-Vātahara* (*Bhavaprakasha*; Sū. Sa. Kalpa 5.20; *vide* refs 11-14). When these *Guṇas* are mapped onto modern patho physiology, they translate into positive inotropy, diuresis / anti-oedema, detoxification, and channel-clearing effects, all of which are therapeutically valuable in congestive heart failure (CHF). From phyto-chemical point, both species are rich in cardenolide glycosides (oleandrin, peruvoside, etc.) that share canonical Na^+/K^+-ATPase blockade → $\uparrow[Ca^{2+}]_i$ → positive inotropic pathway (ref 16). Pre-clinical organ bath and Langendorff studies (Adome *et al.*, 2003; ref 17) reproducibly demonstrate digoxin-like increase in contractile force, stroke volume and cardiac output, establishing robust mechanistic bridge between classical claims and laboratory findings.

Early human data, though methodologically modest, are congruent: two companion trials in the late 1970s reported clinically significant improvement in dyspnoea, peripheral oedema and exercise tolerance in CHF/cor-pulmonale after low-dose Tincture Karavīra (refs 18). These outcomes mirror the theoretical Ayurvedic indications of *Hṛudya-daurbalya* and *Śhotha,* lending historical legitimacy to present-day ethnomedical use.

Toxicology, however, remains the critical limitation. The therapeutic window is extremely narrow; doses exceeding 2–3 mg powdered leaf - or ingestion of a single *T. peruviana* seed - can cause fatal arrhythmias. Modern clinicians therefore avoid crude preparations, whereas classical Āyurveda emphasises *Śhodhana* procedures and micro-dosing within polyherbal matrices (e.g., *Karaveeradi Vati, Karveerādi Kaṣhaya*). These compound formulations not only attenuate acute toxicity but also harness synergistic diuretic and *Vāta-Kapha*-palliative herbs, potentially widening the safety margin (refs 19-21).

Conclusion

Karveer (*Nerium indicum / Thevetia peruviana*) embodies a striking paradox: potent digitalis - like cardiotonic efficacy at micro-doses and lethal cardiotoxicity at only modestly higher exposures. Classical *Ayurvedic* texts anticipated this duality, classifying the drug among *Upavisha* yet recommending it - after rigorous purification - for disorders characterized by *Kapha-Vāta* congestion, edema and cardiac debility.

Contemporary pharmacology confirms the mechanistic rationale via Na^+/K^+-ATPase inhibition and consequent positive inotropy, while pre-clinical and limited clinical data suggest symptomatic benefit in CHF.

In its current form, *Karveera* is best regarded as a research lead and an adjuvant in expert *Ayurvedic* practice, not a stand-alone cardio tonic for routine clinical use. Future progress hinges on (i) phytochemical standardization of traditional formulations, (ii) modern dose-finding and safety trials, and (iii) derivation of safer glycoside analogues. Until such evidence accrues, meticulous dose control, polyherbal buffering, and toxicovigilance remain mandatory to convert *Karveer's* ancient promise into a scientifically validated therapeutic option.

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