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# Kākolī-An important medicinal plant of Ayurveda suffering from identification syndrome

**Ramakant Marde and Rajesh Kumar Mishra**

**Abstract**
The Vedic era was the golden period in Indian history. India had contributed a lot to the world during that period. Wherein, for the first time in the world, origin and development of culture and civilization was brought by our ancestors. At the same time Indian sages gave the legacy of *Āyurveda*, cosmic knowledge, yogic education, spiritual knowledge and the science of knowledge building to the world at large. In *Āyurveda* medicinal plants have been classified into various groups like *Aṣṭavarga*, *Triphalā*, *Trikaṭu*, etc. According to *Ācārya Śārangadhara*, *Aṣṭavarga* means group of eight medicinal plants *viz., Kākolī*, *Kṣīrakākolī, Medā*, *Mahāmedā*, *Jīvaka*, *Riṣbhaka*, *Riddhī* and *Vṛiddhī*. Among these medicinal plants *Kākolī* was introduced under the *Shukrajanana*, *Snehopaga*, *Angamardaprashmana*, *Jivaneeya Dashemaani* in *Caraka Samhita* and *Kakolyadi Varga* in *Susruta Samhita*. Description of *Kākolī* along with its Sanskrit synonyms, habit, habitat and medicinal properties has been mentioned in different *Nighantus*.

**Keywords:** Aṣṭavarga, triphalā, trikaṭu, kākolī, kṣīrakākolī, medā, mahāmedā, jīvaka, riṣbhaka, riddhī, vṛiddhī

## 1. Introduction
Until the development of modern botanical nomenclature and classification system for the identification of plants, there was a great confusion and contradiction in the identification of medicinal plants. The classical texts like nighaṇṭu mentioned many synonyms for each plant on the basis of medicinal property, morphology, habit and habitat of that plant. Along with it the names given to the plants were linked to other natural forms, to which they resembled. This format was considered appropriate during that era because people were very close to nature at that time. During this era, there was not much mystery and confusion regarding medicinal plants, because at that time the education was very much practical and close to nature. In this era the knowledge was communicated through verbal practices. In the history, a time came when a lot of literature was written or verbally communicated from one generation to another. After this period the gradual development of classical medicinal plants related to Āyurveda got restricted. Many wrong perceptions developed in the identification of medicinal plants and their usage. This created difficulty in correct identification and use of medicinal plants. The difficulty in finding their natural habitat, lack of knowledge of the specific ecological conditions, difficulty in access and scarce availability has also contributed to the mystery about their botanical identity; as these plants grow in small ecological niches. Many scholars attempted to explore and carry research on medicinal plants, but they were confused in many instances.

**Specific habitat of Kākolī as per Ayurveda:** According to ancient scriptures specially described in *Bhāvaprakāsa* [1] and *Śāligrāma-nighantu* [2] *Kākolī*, *Kṣīrakākolī, Medā* and *Mahāmedā* are grown in south east part of Himalaya.

**Morphological characters of Kākolī as per Ayurveda**
According to Bhāvaprakāsa nighantu (one of ancient and important ayurvedic treatise) *Kākolī* is a tuberous plant and its tuber resemble the tuber of satavari (*Asparagus racemosus* Willd.). Its stem is slightly purple in colour [1].

**Vernacular names of Kākolī**
**Name in Indian Languages [3]:** Hindi Kakoli; Gujarati- Kakoli; Kannada- Kakoli; Malayalam- Kakoli; Tamil- Kakoli; Telugu- Kakoli; Nepali-Bhordaya, Bhuin Saro, Rasagari.

**Name in Foreign Languages [3]:** English: Roscoe's purple lily, Purple Roscoe Lily, Purple Roscoea, Cinnamon stick, Hardy ginger China-Xiangya shen cen.

**Pharmacological properties and uses of Kākolī as mentioned in modern scriptures [3]:** Its rhizome acts as Anti-rheumatic, febrifuge, galactagogue, haemostatic, expectorant, sexual stimulant, spermatogenic and tonic. Its rhizome is useful in heamatemesis, excessive thirst and rheumatic pain. The ethanolic extract of its rhizome exhibit immunostimulant potential in mice.

**Adulteration and Substitute herbs [1, 3]:** The plants mentioned in Aṣṭavarga (Kākolī one of them) are difficult to obtain for a long time and the botanical identification of Aṣṭavarga has remained controversial. So, some ayurvedic treatise suggested substitute of Aṣṭavarga plants. In the place of Kākolī, Aśwagandhā roots are suggested.

**Ayurvedic Medicinal properties of Kākolī [4, 5, 6, 7, 8, 9, 10, 11, 12, 13]:** Rasa (taste)- Sweet; Guṇa (attribute)- heavy, mucilaginous; Vīrya (potency)-cold; Vipāka (post metabolic taste)-Sweet; Doṣakarma (action on tridosa)- Vātapittaśāmaka, śleṣmakāraka; Roghanatā (action on disorders)- blood related disorders, tuberculosis, emaciation, fever, burning sensation and vertigo. Other karma (other action) – Rejuvenator, aphrodisiac and tonic.

**Interpretation of Sanskrit synonyms of kākolī**

Arkapuṣpikā [14] Its flowers resemble to Arka (*Calotropis procera*) flower.; Kākolī [14] It contains high moisture value.; Kāyasthā [14] It makes body firm.; Kālikā [15, 14] After maturity its stem turns purple in colour.; Kṣīrakākolī [14] - Due to its white colored flower. Kṣīraśuklikā [14] Due to its white coloured flower. Kṣīrā [15, 14] Due to its white or pale colored rhizome.; Dhīrā[14]-It bears a lot of medicinal quality.; Payasyā [15, 14] It grows in rainy season.; Payasvinī[14] -It acts as galactogogue. Madhurā [14] It bears madhura (sweet) rasa.; Vayasthā [16] - It provides stability to life.

**Therapeutic properties of Kākolī on the basis of different ayurvedic scriptures [17].**

| Sr. | Category of Disease | Specific conditions treated by Kākolī |
|---|---|---|
| 1. | Thoracic diseases | Treatment of chest injury, intrinsic pulmonary haemorrhage, tuberculosis, cough, asthma & bronchitis |
| 2. | Abdominal diseases | Treatment of *Gulma*, dyspepsia, diarhhoea |
| 3. | Renal & urinary bladder diseases | Treatment of dysuria |
| 4. | Musculo-skeletal diseases | Treatment of gout |
| 5. | Dermatological diseases | Treatment of sinus, boils & stomatitis |
| 6. | Neurological disorders | Treatment of insanity |
| 7. | Generalized body disorders | Treatment of anaemia, malaria, paresthesia (burning sensation), remittent fever & general debility |
| 8. | Rejuvenation & Virility strengthening | Treatment of oligospermia (Low sperm count), sexual debility), immunity promoter |
| 9. | Paediatric diseases | Remedy for child emaciation |
| 10. | Alexipharmic treatment | Antidote for spider poisoning |

**Medicinal uses of of Kākolī as per Ayurveda[17]**

1. Nagabalasarpi (specific medicinal formulation) processed with kākolī and other herbs is use to treat intrinsic hemorrhage, chest injury, tuberculosis, giddiness, burning sensation, wrinkles and premature greying of hair. Also increases longevity.
2. Powder of kākolī and other herbs mixed with proper doses of honey and crystal sugar, is useful in treating cough and cardiac diseases.
3. Kākolī rhizome powder used with orange rind powder is effective in the treatment of asthma and bronchitis.
4. Vacadi oil (medicated oil) processed with Kākolī and other herbs is is beneficial in gulma, distension, indigestion, dyspepsia, and urinary incontinence.
5. Rhizome powder is used internally in the treatment of sexual debility.
6. Clarified butter processed with kākolī and other medicinal herbs is use to treat gout.
7. Oil processed with kākolī and other herbs is use to treat sciatica, kyphosis, gout and urinary disorders.
8. Clarified butter processed with kākolī and other medicinal herbs is use to treat boils, cephalic diseases, stomatitis and emacitation in children.
9. 10 Clarified butter processed with kākolī and other medicinal herbs in proper doses is useful in treating insanity and also enhances body strength.
10. Cyavanaprasa prepared with kākolī and other medicinal herbs, if taken in proper doses and in prescribed way are acts as rejuvenator.
11. Tablet prepared with Kākolī and other herbs used in proper doses helps in attaining body strength, potency and it also strengthens virility.
12. Clarified butter processed with Kākolī and other medicinal herbs used in proper doses enhances virility and strengthening properties.
13. Intake of powder prepared from Kākolī and other medicinal herbs in proper doses acts as conception promoter, galactagouge, tissue promoter and spermatogenic. It Also useful to treat dipsia, hemorrhage, tuberculosis, emaciation, fever and burning sensation.
14. Intake of powder prepared from Kākolī and other medicinal herbs acts as a immunity promoter.
15. Cyavanprasa processed with Kākolī and other medicinal medicinal herbs is use to treat emaciation caused due to any injury, atrophy, cardiac diseases, hoarseness, asthma, cough, dipsia and other diseases. Its regular usage also enhances the intellect, long life, memory and many other such rejuvenating properties.
16. Intake of clarified butter processed with Kākolī and other medicinal herbs in appropriate doses is use to treat child emaciation.

**Part used:** Rhizome

**Substitute herbs as per Ayurveda [18]:** The plants mentioned in Aṣṭavarga (Kākolī one of them) are difficult to obtain for a long time and the botanical identification of

Astavarga has remained controversial. So some ayurvedic treatise suggested substitute of Astavarga plants. In the place of Kakoli, ashwagandha roots are suggested.

**Views of scholars regarding botanical source of Kākoī**

A brief description of work related to kākolī presented by modern and Āyurveda scholars are given below-

| Sr. | Author(s) | Name of Publication | Year | Proposed Botanical Source of Kākolī |
|---|---|---|---|---|
| 1 | Dr. Krishna Chandra Chunekar | Vanaspati Anusandhāna Darśik· [19]. | 1969 | *Roscoea procera* (Syn. *Roscoea purpurea*); *Roscoea alpina* |
| 2 | Thakur Balwant Singh and K. C. Chunekar | Glossary of Vegetable Drugs in Brihattrayi [20]. | 1972 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 3 | Dr. Mayaram Uniyal | Medicinal Flora of Garhwal Himalayas; [21] Medicinal Plants and Minerals of Uttarakhand, Himalayas [22]. | 1989, 1997 | *Roscoea procera* (Syn. *Roscoea purpurea*); *Roscoea alpina* |
| 4 | Vaidyaratnam PS, Warrier | Indian Medicinal Plants [23]. | 1994 | *Fritillaria roylei* |
| 5 | Dr. Guru Prasad Sharma | Dhanvantri Nighaṇṭu [24]. | 1998 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 6 | N.S. Chauhan | Medicinal and aromatic plants of Himachal Pradesh [25]. | 1999 | *Roscoea procera* (Syn. *Roscoea purpurea*); *Roscoea alpina*; *Fritillaria roylei* (Syn. *Fritillaria cirrhosa*) |
| 7 | Dr. S. D. Kamat | Studies on Medicinal Plants and Drugs in Dhanvantri Nighaṇṭu [26]. | 2002 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 8 | Pande, PC, Tiwari L., & Pande, H. C. | Folk-Medicine and Aromatic Plants of Uttaranchal [27]. | 2006 | *Roscoea procera* (Syn. *Roscoea purpurea*); *Roscoea alpina*; *Fritillaria roylei* (Syn. *Fritillaria cirrhosa*) |
| 9 | Singh, A. P. | Ashtavarga- rare medicinal plants [28]. | 2006 | *Roscoea procera* (Syn. *Roscoea purpurea*) and *Fritillaria roylei* |
| 10 | Mehrotra *et al*. | Ayurvedic rasayana therapy and rejuvenation (Kayakalp) [29]. | 2006 | *Lilium polyphyllum* |
| 11 | Negi *et. al*. | Medicinal & aromatic plants [30]. | 2007 | *Fritillaria roylei* |
| 12 | Singh *et al*. | Medicinal orchids: an overview [31]. | 2009 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 13 | Sharma *et. al.* | Conservation of Phyto-diversity of Parvati Valley in North western Himalayas of Himachal Pradesh- India [32]. | 2010 | *Roscoea purpurea*; *Roscoea capitata* |
| 14 | Sharma, T. P., & Sharma, S. | Medicinal plants of Sikkim [33]. | 2010 | *Fritillaria cirrhosa* |
| 15 | Acharya P.V. Sharma | An Introduction to the Dravyaguṇa [34]. | 2010 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 16 | Chauhan *et al*. | Morpho-biochemical variability and selection strategies for the germplasm of *Fritillaria roylei* Hook (Liliaceae) an endangered medicinal herb of western Himalaya [35]. | 2011 | *Fritillaria roylei* |
| 17 | Rath *et al*. | Pharmacognostical & phytochemical studies of *Roscea procera* (Kakoli) and *Lilium polyphyllum* (Ksheerkakoli) in comparison with market samples [36]. | | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 18 | Acharya Balkrishan | Secrets of Aṣṭavarga Plants [37] & Astavarga plants-threatened medicinal herbs of the NorthWest Himalaya [38]. | 2012 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 19 | Wagh *et. al.* | Medicinal plants used in preparation of polyherbal ayurvedic formulation Chyawanprash [39]. | 2013 | *Lilium polyphyllum* |
| 20 | Ghosh *et al*. | Comparative estimation and chemical standardization of new and old sample of chyawanprash [40]. | 2013 | *Lilium polyphyllum* |
| 21 | Sharma *et. al.* | Quality of life changes in knee osteoarthritis (janusandhigatavata) with matrabasti [41]. | 2013 | *Fritillaria roylei* |
| 22 | Prof. K.C. Chunekar | Bhāvaprakāśa Nighaṇṭu [42]. | 2013 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 23 | P.V. Sharma and Guruprasad Sharma | Kaideva Nighantu [43]. | 2013 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 24 | Wiersema, J. H., & Leon, B. | World economic plants [44]. | 2013 | *Fritillaria cirrhosa* |
| 25 | Kumar, M., Khare, A., & Shukla, C. P. | Medicinal plants aspects & prospects [45]. | 2014 | *Fritillaria roylei*, *Roscoea alpina* |
| 26 | Sagar *et al*. | Adulteration and substitution in endangered, ASU herbal medicinal plants in India, their legal status, scientific screening of phytochemical constituents [46]. | 2014 | *Roscoea purpurea* |
| 27 | Gopal *et al.* | Study of antioxidant property of the rhizome extract of Roscoea purpurea Sm. (Kakoli) and its use in green synthesis of Gold nanoparticles [47]. | 2014 | *Roscoea purpurea* |
| 28 | Rawat *et al.* | Assessment of nutritional and antioxidant | 2014 | *Roscoea procera* (Syn. *Roscoea purpurea*) |

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| | | potential of selected vitality strengthening Himalayan medicinal plants [48]. | | |
| 29 | Miyazaki *et al*. | Chemical constituents from the aerial parts and rhizomes of *Roscoea purpurea* [49]. | | *Roscoea purpurea* |
| 30 | Raj *et. al.* | Review on the concept of immuno-modulation in Ayurveda with special emphasis on prakara yoga [50]. | 2014 | *Roscoea purpurea* |
| 31 | Ingalhalli, R., Rathod H., Desai H. | A Short Review on Astavarga Plants-Losing Their Existence [51]. | 2015 | *Roscoea purpurea* |
| 32 | Acharya Balkrishna | Chandra Nighaṇṭu [52]. | 2015 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 33 | Acharya Balkrishna | Madanapāla Nighaṇṭu [53], Hṛdayadīpaka Nighaṇṭu [54]. | 2016 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 34 | Rashtriya Ayurveda Vidyapeeth | Medicinal Plants Used in Ayurveda [55]. | 1998, 2016 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 35 | Acharya Balkrishna | Raja Nighantu [56], Sodhala Nighantu [57]. | 2016 | *Roscoea procera* (Syn. *Roscoea purpurea*) |
| 36 | R. K Mishra *et al.* | Phytochemical, Botanical and Biological Paradigm of Astavarga Plants- the Ayurvedic Rejuvenators [59]. | 2018 | *Roscoea procera* (Syn. *Roscoea purpurea*) |

**Conclusion**

From the above-mentioned information, we have concluded that various controversies were existing regarding the botanical source of Kākolī since past. Unfortunately, due to the lack of plant identification knowledge many species are now named and used as Kākolī in various parts of our country but among them three species i.e. 1. *Roscoea purpurea* Sm., 2. *Roscoea capitata* Sm. and 3**.** *Roscoea alpina* Royle are widely accepted as *Kākolī*.

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