



## REVIEW ARTICLE

# Critical Review of Controversial Herbs of *Surasadi gana* Mentioned in *Sushruta Samhita*

<sup>1</sup>Meena S Deogade, <sup>2</sup>Shivarama P Kethamakka

## ABSTRACT

**Background:** Medicinal plant controversy either in identification or accompanied usage of nomenclature disturbs the quality of formulation and practices. Common controversies (*Sandigdghata*) cause misinterpretations for the identification of plants as the description is present in Sanskrit. Fifteen herbs of *Surasadi gana* of *Sushruta* are either in a state of controversy or have doubtful identity.

**Materials and methods:** To resolve the controversy, the PRISMA model of data collection is undertaken. Nomenclature and morphological characters of controversial *Surasadi gana* herbs were collected from different texts.

**Observation and results:** All fifteen herbs of controversy are determined to possible extent based on the methodology used in the study.

**Conclusion:** The controversies of *Surasadi gana* herbs are clarified through synonyms and morphological characters to its botanical identity. In addition, necessary revalidations of these herbs with their therapeutic values need to be studied further.

**Keywords:** Ayurveda, Controversial herbs, *Dravyaguna*, *Sandigdgha dravya*, *Surasadi gana*.

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## INTRODUCTION

Medicinal plants controversy leading to misinterpretations in the identification of plants is accompanied either with the usage of single nomenclature to many plants or a single plant used with multiple synonyms.<sup>1</sup> Few herbs are pronounced with different nomenclatures or dialects

in different regions. It is very much necessary to find the regional nomenclature of a particular herb to identify in a specified geographical area. Otherwise, mistaken identity is the consequence as the herb identification varies from place to place. Ayurveda described the morphology of a plant through various synonyms is difficult to attribute to a single herb and thereby the argumentation of controversy is initiated. In a formulation when different herbs are used with synonyms, then the purpose, reference, treatise, and reasoning are considered for proper incorporation of the correct herb ingredients.<sup>2</sup>

Mahendra Bhogika of Dhanvantari Nighantu suggested controversy resolving solutions as the study of vernacular names and synonyms that could be compared to morphological characters of a plant by which one could identify a plant precisely.<sup>1</sup> Narahari Pandit of Raja Nighantu has classified the nomenclature of herbs based on seven parameters. They are *Rudhi* (specific term), *Prabhava* (natural power), *Desha* (place of origin), *Lanchana* (special character), *Upama* (simile), *Veerya* (potency), and *Iterahvaya* (other).<sup>3</sup>

Dalhana, the commentator of *Sushruta Samhita*, affirms that one herb is known with different names in different provinces. Hence, one should be familiar with all these vernacular names. The familiarization of local herbs is achieved only from farmers of that regions or tribal and hermits who have the knowledge of forest herbs, tubers, roots, and fruits as they use it as food and medicine.<sup>4</sup> Sushruta and Dalhana stressed the importance of literary study in which herbs are described with their synonyms along with an emphasis on the field study. Further, he added that the field study should have conversations with the people who are intimately acquainted with the nature and the technique of fieldwork.<sup>5</sup>

Due to urbanization, deforestation, and mutation in plants, it creates confusion in the identification of plants. It is also difficult to procure crude/fresh herbs to a physician. Therefore, the physician depends on deceitful intermediaries of profiteering motives who have no distinguishing capacity to identify the original herb. Hence, they adulterates the herb even more. To resolve this issue of controversy, it requires a thorough and multifaceted study conducted with the background knowledge of Ayurveda, History, Sanskrit, Botany, Field survey, Geography, and other related sciences.

<sup>1,2</sup>Professor

<sup>1</sup>Department of Dravyaguna, Mahatma Gandhi Ayurved College, Hospital and Research Centre, Wardha, Maharashtra, India

<sup>2</sup>Department of Panchkarma, Mahatma Gandhi Ayurved College, Hospital and Research Centre, Wardha, Maharashtra, India

**Corresponding Author:** Meena S Deogade, Professor, Department of Dravyaguna, Mahatma Gandhi Ayurved College, Hospital and Research Centre, Wardha, Maharashtra, India, Phone: +91 9404049302, e-mail: drmmeeena@rediffmail.com

Ayurvedic treatises grouped herbs into either *Varga* or *Gana*. This grouping or classification is based on either pharmacological properties or dietary use. Etymologically, the *Varga* and *Gana* offer the same meaning. These groups have the herbs of similar pharmacological properties. *Sushruta* has mentioned 37 such groups of drugs. Out of these, 32 have members in indefinite numbers wherein five groups have only five members in each group (*Panchamoola*). *Sushruta* has stressed upon the multiple indications of groups and named the group on the basis of priority ingredient in it. For example, *Aragvadhadi*, *Salasaradi*, *Varunadi*, etc.

*Surasadi gana* is the eighth group out of 37 said by *Sushruta*. This group contents are 22 plants and have the potency to pacify Kapha. The indications are *Kasa* (EA-3), *Shvasa* (EA-4.5), *Pratishyaya* (I-1.8), *Kushtha* (ED-4.2), *Krimi* (N/infection), and *Vrana* (K).<sup>6</sup>

## MATERIALS AND METHODS

The PRISMA model (Flowchart 1) is an evidence-based minimum set of items for reporting and is adopted for the collection of literary evidences to rule out the controversy in *Surasadi gana* herbs from all available classical as well as modern texts. The data were studied and reviewed, and the valuable conclusions have been drawn from the reviewed literature. Evaluation of controversy is attempted on the basis of synonyms and morphological characters mentioned in ancient texts to resolve the controversy. These claims will be helpful for the identification of righteous herbs.

## OBSERVATION AND RESULTS

Most of the herbs from *Surasadi gana* are either in a state of controversy or have a doubtful identity. Eight to nine

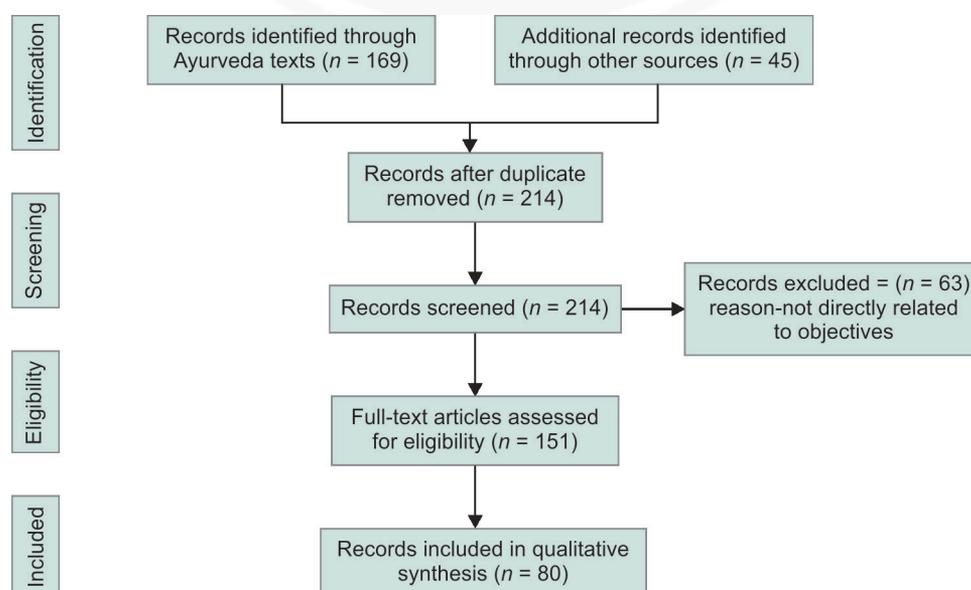
herbs are said as varieties of *Tulasi* or appear to be different species of the Lamiaceae (Labiatae) family. These are mentioned to be used for a similar utility or in the same contexts. *Barbari* is used for five different herbs which led to misinterpretations or controversy. Synonyms usually reflect the morphological character, origin, property, or therapeutic efficacy of a particular drug (Table 1).

*Marubaka* and *Kutheraka* synonyms suggest an origin of the plant, i.e., dryland and extreme hot conditions. *Phanijhaka*, *Kharapatra*, *Damanjari*, *Kalamala*, and *Kuntha* synonyms indicate the morphological characters of respective plants. *Arjaka*, *Sumukha*, and *Rochana* explain the action of plants and *Parnasa*, *Sugandhaka*, and *Ajagandhika* suggest the specific aroma. With the help of synonyms, the herbal drug was recognized and compared with its probable scientific (Latin) name and family according to the modern botany (Table 2).

## DISCUSSION

*Surasadi gana* is the eighth group out of 37 groups. This group contains 22 plants such as *Surasa*, *Shveta surasa*, *Phaninjaka*, *Arjaka*, *Bhustruna*, *Sugandhaka*, *Sumukha*, *Kalamala*, *Kutheraka*, *Kasamarda*, *Kshaoaka*, *Kharapushpa*, *Vidanga*, *Kataphala*, *Surasi*, *Nirgundi*, *Kulahala*, *Undurukarnika*, *Phanji*, *Prachibala*, *Kakamachi*, and *Vishamushtika*. *Surasa* is the synonym of *Tulasi*. The word *Tulasi* is not found in *Vedic* or *Samhita* and also in *Brihatrayi*, but the commentators *Chakrapani* and *Arunadatta* accepted *Surasa* as *Tulasi*.<sup>7</sup> In many *nighantu*, *Tulasi* is presented with a synonym of *Surasa*, whereas *Madanapala nighantu*, the first time used the word *Tulasi* as a title, and later followed by *Bhavamishra*<sup>8</sup> and others. With this, it is clear that the *Surasa* word was used for *Tulasi*. Thus, out of these 22 drugs, *Surasa*

Flowchart 1: Concise systematic review of literature—PRISMA 2009



**Table 1:** Synonyms of controversial drugs of *Surasadi gana*

S. No.	Plant name	Synonyms
1	<i>Phanijhaka</i>	<i>Marubaka</i> , <i>Teekshnagandha</i> , <i>Phanija</i> , <i>Marava</i> , <i>Maru</i> , <i>Maruttaka</i> , <i>Phanijbhaktha</i> , <i>Dalaadhaka</i>
2	<i>Arjaka</i>	<i>Shveta-Barbari</i> , <i>Shveta-Kutheraka</i> , <i>Kharapatra</i> , <i>Nagandha Bavari</i> , <i>Ajagura</i>
3	<i>Bhustruna</i>	<i>Bhustruna</i> , <i>Katruna</i> , <i>Jambira</i> , <i>Dhyamaka</i> , <i>Rohisha</i> , <i>Sugandhaka</i>
4	<i>Sugandhaka</i>	<i>Bhsutrana</i> , <i>Kumbhayoni</i> , <i>Kutumbaka</i>
5	<i>Sumukha</i>	<i>Vanabarbarika</i> , <i>Parnasa</i> , <i>Krushnatulasi</i> , <i>Rajika</i> , <i>Katupatrakhya</i> , <i>Suvadana</i> , <i>Sumukha</i> , <i>Suprashasta</i> , <i>Suvaktra</i> , <i>Svaasya Rochana</i> , <i>Pachana</i> , <i>Doshatkleshana</i> , <i>Katu Patra</i>
6	<i>Kalamala</i>	<i>Barbarika</i> , <i>Krushnamallika</i> , <i>Krushnarjaka</i> , <i>Parnas</i> , <i>Ajagandhika</i>
7	<i>Kutheraka</i>	<i>Shveta Kutheraka</i> , <i>Shveta Parnaas</i> , <i>Kuthera</i> , <i>Kathinjara</i> , <i>Kutheraka</i> , <i>Vaikuntha</i> , <i>Kuntha</i> , <i>Sitaarjaka</i> , <i>Vana Barbari</i>
8	<i>Kshavaka</i>	<i>Asuri</i> , <i>Rajika</i>
9	<i>Kharapushpa</i>	<i>Kharabusa</i> , <i>Marubaka</i> , <i>Barbari</i> , <i>Parnas</i> , <i>Sugandha</i> , <i>Tuvari</i> , <i>Tungi</i> , <i>Vanabarbari</i>
10	<i>Katphala</i>	<i>Somavalka</i> , <i>Kumbhi</i>
11	<i>Surasi</i>	<i>Bilvanasi</i> , <i>Kapitthapatri</i> , <i>Sindhuvara</i> , <i>Shephalika</i> , <i>Nirgundi</i>
12	<i>Kulahala</i>	<i>Mundika</i> , <i>Bhukadamba</i> , <i>Kukurasinga</i> , <i>Kukaraundha</i> , <i>Shravani</i> , <i>Mahashravani</i> , <i>Kadambapushpika</i>
13	<i>Phanji</i>	<i>Bharangi</i>
14	<i>Prachibala</i>	<i>Matsyaksha</i> , <i>Kakajangha</i> , <i>Gandadurva</i> , <i>Kakamachi</i> , <i>Nadikantha</i> , <i>Jalapippali</i> , <i>Masi</i>
15	<i>Vishamushtika</i>	<i>Vishamushtika</i> , <i>Mahanimba</i> , <i>Bruhat Alambusha</i> , <i>Karkotika</i> , <i>Dreka</i> , <i>Kupeelu</i> , <i>Parvat Nimba</i> , <i>Mahapichumarda</i> , <i>Aksheeva</i>

(*Ocimum tenuiflorum* L.), *Kasamarda* (*Cassia occidentalis* L.), *Kakamachi* (*Solanum nigrum* L.) *Vidanga* (*Embelia ribes* Burm.f.), *Nirgundi* (*Vitex negundo* L.), *Undurukarnika* (*Ipomea reniformis* Chois) are identified clearly without any controversy. Remaining 15 drugs are having controversy, mostly based on their synonyms. Hence, this controversy resolved is discussed below.

### **Phanijhaka**

*Phanijhaka* has been identified by Balawant Singh as *Ocimum basilicum* L. or *Origanum majorana* L.<sup>9</sup> Dalhana mentioned that *Phanijhaka* is commonly known as *Marubaka* or *phanija*.<sup>10,11</sup> Agnivesha accepted it as *Parnasabheda*<sup>12</sup> and Arunadatta considered it as *Marichaka* or *Tikshnagandha*.<sup>13</sup> Most of the synonyms like *Maru*, *Marudbhava*, *Maruttaka*, etc. are suggestive of a dryland plant or one which needs less water for its growth. Dalhana and Chakrapani consider it as *Teekshna gandha parnaas* (strong scented Labiatae drug).<sup>14</sup> Word *Phani*, *Phanijhaka*, *Phanijbhakta*, and *Dalaadhaka* denote a plant bearing many leaves arranged in a fashion as that of the hood of a snake, or because of the arrangement of foliages the plant may bend to give this type of appearance. Khare<sup>15</sup> in Indian medicinal plants correlates it with *Origanum majorana* L. (sweet marjoram) a small perennial plant extensively cultivated in India. The above-said descriptions match with this plant, hence, can be considered as a source plant for *Phanijhaka* (*Origanum majorana* L.) belonging to the family Lamiaceae. It is an aromatic herb found in the garden throughout India. It is of two types on the basis of flower color, white commonly used as medicine and black for worshipping Lord Shiva. It is indicated in amenorrhea, cold, wound, liver disorders, and infectious condition.<sup>16</sup>

### **Arjaka**

Bhavaprakash nighantu considers *Arjaka* as white (*Shveta*) variety of *Barbari*, i.e., *Vana Tulasi*, which is available in three types: *Krishna*, *Shveta*, and *Vatapatra*.<sup>17</sup> Arunadatta also mentioned it as *Shveta-Kutheraka* and described it as *Kharapatra*, which is a synonym of *Barbari*.<sup>13</sup> Dalhana has described *Arjaka* as a white variety of *Kutheraka*, similar to *Barbari* (*Barbarikakaro*) which is with short flowering shoots, small leaves, and without any aroma.<sup>10</sup> Singh<sup>18</sup> after a vigorous study said that the description of Dalhana seems to be applied to a herb known as *Orthosiphon pallidus* Royle, popularly called *Nagandha Bavari* or *Ajagura*. The etymological meaning of the word *Arjaka* suggests the generation or induction of appetite. This is said to be useful in diabetes, dyspnea, and fever. In Charaka Samhita, it is accepted as a *Shveta tulasi*.<sup>19</sup> Though the *Tulasi* is having aroma and *Arjaka* is without, it is accepted that *Arjaka* is *Shveta-Kutheraka* or *Shveta Barbari*. With the all above theoretical derivations finally, *Arjaka* can be correlated as *Orthosiphon pallidus* Royle, which is a small quadrangular shrub, possessing small leaves (*Kshudrapatra Tulasi*), used in the form of tea (java tea) for increasing appetite, kidney diseases, gout, and rheumatism.<sup>20</sup>

### **Bhustruna**

*Bhustruna*, *Katruna*, *Jambira*, *Dhyamaka*, and *Rohisha* are known as grass varieties and sometimes observed as synonyms of one to another.<sup>21</sup> But in *Agurvadya taila* of *Charaka Samhita*, *Dhyamaka*, *Rohisha*, and *Bhustruna* are mentioned as different.<sup>22</sup> Thereby, these plants are considered as different plants. The *Jambira* and *Bhustruna* are mentioned as different in *harita varga* of charaka, *Pippalyadi shaka* of sushruta, and *kutheradi gana* of vagbhata.

**Table 2:** Controversy in botanical identification and probable confirmation of Surasadi gana dravya

Name	Controversy between plants	Confirm probable identified plant	Family
	Botanical name	Botanical name	
Phanijhaka	<i>Ocimum basilicum</i> L. and <i>Origanum majorana</i> L.	<i>Origanum majorana</i> L.	Lamiaceae (Labiatae)
Arjaka	<i>Ocimum basilicum</i> L. <i>Orthosiphon pallidus</i> Royle ex Benth.	<i>Orthosiphon pallidus</i> Royle ex Benth.	Lamiaceae
Bhustruna	<i>Cymbopogon citratus</i> (DC.) Stapf (Poaceae)	<i>Hyptis suaveolens</i> (L.) Poit.	Lamiaceae
Sugandhaka	<i>Hyptis suaveolens</i> (L.) Poit. <i>Cymbopogon ambiguus</i> (Hack.) A. Camus (Poaceae)	<i>Leucas cephalotes</i> (Roth) Spreng.	Lamiaceae
Sumukha	<i>Brassica juncea</i> (L.) Czern. <i>Ocimum gratissimum</i> L.	<i>Ocimum gratissimum</i> L.	Lamiaceae
Kalamala	<i>Orthosiphon pallidus</i> Royle ex Benth. <i>Ocimum basilicum</i> L.	<i>Ocimum basilicum</i> L.	Lamiaceae
Kutheraka	<i>Orthosiphon pallidus</i> Royle ex Benth. <i>Ocimum americanum</i> L.	<i>Ocimum americanum</i> L.	Lamiaceae
Kshavaka	<i>Brassica juncea</i> (L.) Czern., <i>Brassica nigra</i> (L.) K.Koch <i>Centipeda minima</i> (L.) A. Braun & Asch.	<i>Centipeda minima</i> (L.) A. Braun & Asch.	Compositae
Kharapushpa	<i>Ocimum basilicum</i> L. <i>Anisomeles malabarica</i> (L.) R.Br. ex Sims	<i>Anisomeles malabarica</i> (L.) R.Br. ex Sims	Lamiaceae
Katphala	<i>Myrica esculenta</i> Buch.-Ham. ex D. Don <i>Careya arborea</i> Roxb. <i>Myristica malabarica</i> Lam.	<i>Myrica esculenta</i> Buch.-Ham. ex D. Don	Myricaceae
Surasi	<i>Limonia crenulata</i> Roxb. or <i>Clausena kanpurensis</i> Molino <i>Vitex negundo</i> L.	<i>Vitex negundo</i> L.	Lamiaceae
Kulahala	<i>Blumea balsamifera</i> (L.) DC. <i>Blumea lacera</i> (Burm.f.) DC. <i>Sphaeranthus africanus</i> L. <i>Sphaeranthus indicus</i> L.	<i>Sphaeranthus indicus</i> L.	Compositae
Phanji	<i>Premna herbacea</i> Roxb. <i>Clerodendrum indicum</i> (L.) Kuntze <i>Picrasma quassioides</i> (D. Don) Benn. <i>Clerodendrum serratum</i> Spreng	<i>Clerodendrum serratum</i> Spreng	Verbenaceae
Prachibala	<i>Leea aequata</i> L. <i>Vitex peduncularis</i> Wall. ex Schauer <i>Peristrophe bicalyculata</i> (Retz.) Nees	<i>Peristrophe bicalyculata</i> (Retz.) Nees	Acanthaceae
Vishamushtika	<i>Ailanthus excelsa</i> Roxb. <i>Strychnos nux-vomica</i> L. <i>Melia azedarach</i> L.	<i>Melia azedarach</i> L.	Meliaceae

*Dhyamaka* is mentioned in *Eladi gana* along with aromatic plants so that it could be similar to *Tagara* and *Mansi*.<sup>23</sup> Commentators Chakrapani and Arunadatta have made their remarks as these are varieties of *Gandhatruna* or scented aromatic grass and having *Ushna veerya* so it may be *Cymbopogon citratus* Stapf.<sup>24,25</sup> But Singh cleared that *Bhutika*, *Bhustruna*, *Sugandhaka*, and *Jambira* are believed to be aromatic plants other than the grass varieties.<sup>26</sup> *Bhustruna* (*bhu* + *truna*) means that it covers the ground either by aroma or spread in bunches. Thus, the

*Bhustruna* is different from *Kattruna*, *Jambira*, *Dhyamaka*, and *Rohisha*. According to Sharma and Khare, it may be *Hyptis suaveolens* Poit. In Bihar, it is known as *Bhunsari* or may be it is *Apabhramsha* (a corrupted form of a word) of *Bhustruna* or *Ganga Tulasi* in Orissa. Most probably, it could be *Gudaka* or *Tumbaru* described by Dalhana. He mentioned that it is similar to *Dronapushpi* (*Dronapushpi sadrushaha*).<sup>27,28</sup> With the above discussions, it is suggested that *Bhustruna* is considered as *Hyptis suaveolens* Poit.

## Sugandhaka

Dalhana has affirmed *Sugandhaka* as *Dronapushpi* but others narrated it as *Bruhat sugandhi truna*.<sup>10</sup> Whereas in another context, he says it as *Gandhatrana aplam*. This clarifies that *Sugandhaka* should be an aromatic grass. *Sugandhi truna*, *Malatrana*, *Sugandha*, and *gandhavadh* all these synonyms suggest that it should be a strong aromatic grass. It might be *Cymbopogon jwarancusa* Schult. a tall grass, with very aromatic roots.<sup>29</sup> However, *Bhustruna* and the *Sugandhaka* are the two drugs mentioned in *Surasadi gana* as well as in *Shaka varga*.<sup>30,31</sup> This suggests that these two are different herbs. Dalhana commenting on *Bhustruna* mentioned a resemblance that *Bhustruna* looks similar to *Dronapushpi* with aromatic in nature.<sup>32</sup> *Lamajjaka* and *Ushera* are also sometimes confused as *Sugandhaka*. Chakrapani, Dalhana, and Arunadatta used *Kutumbaka* and *Chhatra* nomenclature for *Dronapushpi*.<sup>33,34,35</sup> Indu has mentioned another synonym for *Dronapushpi* as *Kumbhayoni* in Shashilekha's commentary.<sup>36</sup>

*Dronapushpi* possess flowers in whorls, which has the appearance of *Drona*, i.e., pot or cup shaped. All synonyms described for *Dronapushpi* are similar in description. The properties explained in the Ayurveda for *Kutumbaka* are similar to the properties of *Dronapushpi* said in Nighantu but the only difference is the virya of *Dronapushpi*. It is said as *ushna* in Nighantu, whereas *Samhita* described it as *Sheeta*. Recently, Singh also cleared that *Bhustruna* and *Sugandhaka* are believed to be aromatic plants other than the grass varieties. There is no grass (*Truna*) added or described in *Surasadi gana*.<sup>37</sup> *Dronapushpi* is an aromatic herb as *Tulasi* and belongs to the Lamiaceae family. *Leucas aspera* Spreng and *Leucas lavandulaefolia* Rees are also called as *Dronapushpi* but confirm source is *Leucas cephalotes* Spreng.<sup>38,39</sup> Therefore, with all the above discussions, it can be fairly concluded that *Sugandhaka* of *Surasadi gana* is *Dronapushpi*, i.e., *Leucas cephalotes* (Roth) Spreng, found in the only rainy season and the whole plant is used as a medicine.<sup>40</sup>

## Sumukha

Charaka has mentioned *Sumukha* as one of the *Parnasa* varieties which include several plants of the Labiatae family such as *Ocimum*.<sup>41,42</sup> *Sumukha* is also considered as *Krishnatulasi*.<sup>43</sup> Dalhana mentioned it as *Rajika* (*Brassica juncea* L. of Cruciferae) but he also mentions that according to others, it could be *Vanabarbarika* commonly called as *Sauha* in local language.<sup>32</sup> Arunadatta cites it as *Katupatrakhya* (having *katu* rasa leaves) and Hemadri said it as resembling *Kuthera*.<sup>13</sup> Raja Nighantukara called it as *Vanabarbarica*.<sup>44</sup> Most of the synonyms like *suwadana*, *sumukha*, *suprashasta*, *suwaktra*, *svaasya*, etc. are suggestive

of its carminative properties and aromatic principles present in it. Because of these properties, it is used as a mouth freshener. *Ocimum gratissimum* L., belongs to the Labiatae family and found in the countryside of all parts of India, often known as *Ban Tulasi* in Hindi.<sup>45</sup> This plant has a bitter sharp taste; carminative, and aphrodisiac; useful in diseases of the brain, the heart, the liver, and the spleen; removes foul breathe; strengthens the gums; and good for gripping pain and piles (Unani). The synonyms *Rochana*, *pachana*, *doshotkleshana*, and *Katu patra* will well match with this plant. The leaves of this plant are usually chewed to remove the bad odor.<sup>46</sup> Hence, synonyms like *Sumukha*, *suwaktra*, and *suwadana* are used. With the above all descriptions, *Sumukha* can be correlated as *Ocimum gratissimum* L., belonging to the Lamiaceae family.

## Kalamala/kalamalika

*Kalamala* is known as *Krishnamallika* or *Barbarika* by Dalhana.<sup>32</sup> It is one of several aromatic plants commonly known as *Krishnarjaka*. It is a type of *Parnas* (a labiatae plant possessing aromatic leaves), bearing purplish tinged corolla and flowers (*Kalamaala*, *Krishnamallika*, *Karala*). Another synonym *Ajagandhika* is specifically used to identify its smell. But Chuneekar correlates it as *Ocimum basilicum* L., commonly called as *Tulasi* or *Babui* in Hindi. He says that this plant bears black flowers and another similar plant is with white flower is called as *Arjaka* (*Orthosiphon pallidus* Royle ex Benth.).<sup>47</sup> Most of the Taxonomists even suggest that the plant *Ocimum basilicum* L. is a strong scented shrub indigenous to lower hills of Punjab. With all these references, it may be concluded that the *Ocimum basilicum* L. belongs to the Lamiaceae family is *Kalamala*. This herb is found in aired regions of India. The whole plant including seeds is used as medicine for common indications such as diarrhea, scorpion bite, pruritus, and wound.<sup>48</sup>

## Kutheraka

Sushruta and Vagbhata have considered it under *Surasadi gana* and Charaka considered it under *Asthapana dravya*.<sup>49</sup> Chakrapani says it a *Parnaas* (Labiatae drug) and Dalhana marked it as *Shveta kutheraka* or *Shveta parnaas*. *Kuthera*, *Kathinjara*, and *Kutheraka* are the different synonyms used for this drug, which means it is a small plant, or can be digested easily, and one which grows in extreme hot condition.<sup>50</sup> Other synonyms like *Vaikuntha* and *Kuntha* suggest especially short stature of the plant. Kaiyadeva considers it as *Kshudrapatra Arjaka*.<sup>51</sup> Dhanvantari nighantu considers it as a type of *Arjaka* or *Parnaas*.<sup>52</sup> Raj nighantukara identifies it as *Sitaarjaka* (white flowered).<sup>53</sup>

Thus, with all above-said points, *Barbari tritaya* mentioned in Bhavaparakasha are three wild species of *Ocimum* or Labiatae drugs. Among these, *Kutheraka* also known as *Vana barbari* or *Parnaas* specially denoting a small plant among all *Ocimum* species. *Ocimum canum* Sims is correlated as *Kutheraka* by some recent authors of dravyaguna. It is a 15–60 cm in height, sweet-scented plant of Labiatae, growing in abundance near cultivated fields, and wastelands throughout India.<sup>48</sup> The above-discussed synonyms will well match with this drug, hence, *Ocimum canum* Sims. can be the *Kutheraka* of *Surasadi gana*.

### **Kshavaka**

*Kshavaka* is similar to *phanijhaka* and produces sneezing so that it is named as *Chhikkika* by Dalhana and Arunadatta.<sup>32,49</sup> According to Charaka, it is mentioned in *shirovirechanopaga* and *katuskandha gana* and used in *shiroroga*. Sushruta has mentioned it for *Atisara* and *Visuchika*.<sup>50</sup> *Asuri* and *Rajika* as a synonym of *Kshavaka* mentioned in Dhanwantari nighantu<sup>51</sup>, but according to other nighantus, *Asuri* and *Rajika* are Brassica species so Singh has mentioned that *Centipeda minima* L. *Brassica juncea* L., *Brassica nigra* L., and some other plants of Labiatae are similar to *phanijhaka* and used in the place of *Kshavaka*.<sup>52</sup> But he also stated that *Centipeda minima* (L.) A. Braun & Asch. commonly known as *Nakchikani* in Hindi is the genuine source of *Kshavaka*. With these discussions, finally, the *Kshavaka* holds good for *Centipeda minima* (L.) A. Braun & Asch. which is a pungent weed that produces sneezing by smelling it.

### **Kharapushpa**

*Kharapushpa* and *Kharabusa* are mentioned in *Surasadi gana* of Sushruta and Vagbhata, respectively. Dalhana considers that there may be a variety of *Kshavaka* or *Marubaka*, whereas Hemadri considers it as only *Marubaka*.<sup>32,49</sup> Bhavaprakash nighantu suggests it as a variety of *Barbari* and its flowers as black in color.<sup>53</sup> Kaiyadeva in *oshadhi varga* opines the same as Bhavamishra. But among recent authors, Thakur Balavant Singh says it as a coarsely hairy aromatic plant of Labiatae, which is not satisfactorily identified.<sup>54</sup> Chunekar also opines it as a coarsely hairy plant of Labiatae. Synonyms *parnas* suggests it as a Labiatae herb and *Sugandha* synonym is suggestive of an aromatic plant. *Tuvari* and *Tungi* terms specify that a plant which grows on hilly regions or in rocky areas. Words *Barbari* and *Vanabarbari* are suggestive of local names of some wild varieties of *Ocimum* species. Thus, with all these references, it can be said that it is a Labiatae drug, having aromatic leaves, and grows in dry regions. This may be the reason for

Dalhana considering it as *Kshavaka* or *Marubaka* bheda, which mean having coarse stem or leaves and grows in dryland (*Maru*).

*Anisomeles malabarica* L. popularly known as Malabar catmint in English, a coarsely haired aromatic Labiatae plant,<sup>55</sup> which grows especially in the Western Ghats from Maharashtra to Karnataka, Andhra Pradesh, Kerala, and Tamil Nadu region. In Kannada, it is known as *Karitumbe*, which is a blackish tinged Labiatae. This may be the reason to consider Bhavaprakash as a type of *Barbari* possessing black flowers. *Anisomeles malabarica* L. is not found in northern parts of India. This may be the reason for Singh's opinion to not satisfactorily identify the plant of Lamiaceae. Thus, with all these references, *Kharapushpa* can be correlated with *Anisomeles malabarica* (L.) R.Br. ex Sims.

### **Kataphala**

*Kayaphala* is *Myrica esculenta* Buch. Ham and belongs to the Myrsinaceae family. This ever-green tree found in the Himalayan range. Though the name is *Kataphala*, its bark is used for medicine. If it is taken in a high dose, it causes vomiting. *Somavalka* and *Kumbhi* are the synonyms of it that have created confusion. Some people accepted it as *Careya arborea* Roxb. and also as *Myristica malabarica* Lam. But Chunekar cleared that *Somavalka* is *Khadira* and *Careya arborea* Roxb. is *Kumbhi* and in further *Myristica malabarica* Lam. is a wild variety of *Jayaphala*. So, the authenticated source of *Katphala* is the bark of *Myrica esculenta* Buch-Ham. ex D. Don.<sup>56</sup>

### **Surasi**

The name *Surasi* is mentioned by Sushruta and Vagbhata in *Surasadi gana*. Dalhana identified it as *Kapittha sadrusa patra*, i.e., *Bilvanasi*. Atrideva gupta also mentioned it as *kapitthapatri* in vidyotini commentary on Ashtanga hridaya.<sup>32,49</sup> Singh and Khare botanically identified it is *Limonia crenulata* Roxb. or *Clausena pentaphylla* DC. but Khare is doubtful about *Clausena pentaphylla* DC.<sup>57-59</sup> Dalhana has mentioned that others considered *Surasi* as a white variety of *Nirgundi*. The synonyms like *Sindhuvara*, *Nirgundi*, and *Shephalika* are found in *Brihatrayi* (the great triad of ancient Ayurvedic texts). Charaka classifies *Nirgundi* under *Krimighna Dashemani*, whereas *Sidnuvara* under *Vishaghna Dashemani*.<sup>60</sup> Arunadatta remarks *Shephali* as *Nirgundi bheda*.<sup>61</sup> Dalhana has mentioned *Surasi* as *Sindhuvara* (*Shveta Nirgundi*) in *Kalpasthanas*.<sup>62</sup> Khare in Indian Medicinal plants mentions that a white-flowered variety is known as *Sindhuvara*, whereas a blue-flowered variety known as *Nirgundi* or *Shephalika*. Thus, botanically it is *Vitex negundo* var. *Negundo*<sup>63</sup> as the source of *Surasi* under *Surasadi gana*.

## Kulahala

*Kulahala* is identified as *Mundika* by Dalhana and *Bhukadamba* by Arunadatta.<sup>37,64</sup> Others considered it as *Kukurasinga* appears to be a name for *Kukaraundha* (*Blumea* species) in Bengal and it is called as *Kalahada* in Gujarat. With this, it is conferred to be *Blumea* species plant, either *Blumea balsifera* DC. or *Blumea lacera* DC. is called as *Kulahala*.<sup>65</sup> But Dalhana has cleared that *Kulahala* is commonly known as *Mundika*. *Bhukadamba*, *Shravani*, *Kadambapushpika* are the synonyms used for *Mundi*.<sup>66</sup> Charaka and Sushruta have made a reference of two types of plants, *Shravani* and *Mahashravani*.<sup>67,68</sup> Bhavaprakash and Narahari even refer *Mundi* and *Mahamundi* in their works. Texts of botany and floras mention *Sphaeranthus indicus* L. and *Sphaeranthus africanus* L. are commonly available species of this genus.<sup>69,70</sup> Most of the recent texts of Dravyaguna have correlated *Mundi* as *Sphaeranthus indicus* L. Morphologically, *S. africanus* is much hairy, stem with wings, and looks bigger than *S. indicus*. Hence, with this information, it is concluded that *Sphaeranthus indicus* L. is the source plant of *Kulahala* (*Mundi*) of *Surasadi gana*.<sup>71</sup>

## Phanji

*Phanji* is known with a synonym of *Bharangi*. It may be more appropriate to say as a variety of *Bharangi*, i.e., *Premna herbacea* Roxb. on account of having more or less similar leaves like that of Lotus. *Phanji* has been used more often as vegetable by the tribals.<sup>72</sup> This plant is used in the name of *Bharangi* in *Konkan* region, but Desai denied as it does not have any properties of *Bharangi*.<sup>73</sup> Hence, it is confirmed that *Clerodendrum serratum* Spreng is *Phanji*. But because of the scarcity in the market now a day's adulteration with other species is reported. *Clerodendrum indicum* (Linn.) Kuntze is sometimes used as a substitute because, in Bengal, it is known as *Bamanhati*, and *Bharangi* in Telugu. The bark of *Picrasma quassioides* (D. Don) Benn. (Simaroubaceae) is sold as *Bharangi* especially in eastern India. Although the *Clerodendrum serratum* Spreng is the confirm source of *Phanji*.<sup>74,75</sup>

## Prachibala

Dalhana commented that *Prachibala* is *Matsyakshaka* or *Kakajangha* or it could be *Gandadurva*. He mentioned *Kakamachi* under *Surasadi gana* and considered it as *Kakajangha*.<sup>32</sup> This justifies the statement of Bhavaprakasha that *Kakajangha* is a variety of *Kakamachi*.<sup>76</sup> The synonyms *Nadikantha* and *Jalapippali* suggest that *Pirachibala* is a plant which grows on riverbank or near water sources. Bhavamishra referred *kakajangha* as *masi* (*Peristrophe bicalyculata* (Retz.) Nees) which is known in Hindi as *masi*. Some

consider *Leea hirta* Roxb. as *Kakajangha* because the stem joints resemble crow's legs. Others say *Vitex peduncularis* Wall is known as *Kakajangha*. But many texts have supported *Peristrophe bicalyculata* (Retz.) Nees as an authenticated source of *Kakajangha*.<sup>48,77,78</sup>

## Vishamushtika

Dalhana believes *Vishamushtika* to be *Mahanimba*, *Brihat alambusha*, or *Karkotika* as accepted by others. *Vishamushti* is the synonym of *Kupeelu* (*Strychnos nux-vomica* L.) as said in *Rasatarngani*. But it is also true that a reference of *Kupeelu* is not available from *Brihatrayi*. In *Dhanwantari nighantu* *Vishamushtika* is the synonym of *Mahanimba*, so in this context, it is better to consider *Mahanimba* for *Vishamushti*.<sup>79</sup> The drug *Mahanimba* is sometimes confused with *Aralu* (*Ailanthus excelsa* Roxb.). But these two are different drugs. In *nighantu*, *Dreka* is used as the synonym of *Mahanimba*. This tree is also known as *Parvata Nimba* is commonly called as *Dreka* in Kashmir and as *Dhareka* in Punjab, which is a mispronunciation of *Dreka*. Tribal people call the tree of *Melia azedarach* L. as *Bakayan*. *Nighantu* have considered it as *Nimba bheda* and have given synonyms like *Parvat nimba*, *Mahapichumarda*, and *Aksheeva*, which suggests that it is a tree similar to *Nimba*, but grows only in hilly regions.<sup>80</sup> *Melia azedarach* L. is accepted by many as *Mahanimba*, which is *Vishamushti* of *Surasadi gana*.

## CONCLUSION

Ample synonyms are found in Ayurveda for descriptions of the plants. Ayurvedic literature revealed various incidences where common vernacular names are in use for two or more entirely different plant species. These synonyms or nomenclature created controversy in the identification of plants and hence the correct source sometimes misleads with a fictitious plant. At present, more than 350 herbs are used in formulations. Controversial source occasionally leads to ineffective herbal products. Therefore, correct identification is very essential. The above discussion and clarification removes the controversy of *Surasadi gana* scientifically and verifies with the traditional knowledge and also provides probable scientific names as identified. It further requires synchronization and focused research on therapeutic efficacy evaluation for authenticating present research based on literary aspects.

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## हिंदी सारांश

सुश्रुत संहिता में उल्लिखित सुरासादि गण की संदिग्ध जड़ीबूटियों की आलोचनात्मक समीक्षा

**पृष्ठभूमि:** औषधीय पौधों की संदिग्धता या तो पहचान में या शब्दावली के उपयोग के साथ योगों और प्रथाओं की गुणवत्ता को बाधित करती है। संस्कृत में प्रस्तुत विवरण के रूप में सामान्य संदिग्धताएं पौधों की पहचान के लिए गलत व्याख्या का कारण बनती हैं। सुश्रुत की सुरासादि गण की पंद्रह जड़ीबूटियां या तो संदिग्ध की स्थिति में हैं या संदेहास्पद पहचान रखती हैं।

**सामग्री एवं विधि:** संदिग्धता को हल करने के लिए डाटा संग्रह के प्रिज्मा मॉडल को अपनाया जाता है। संदिग्ध सुरासादि गण की जड़ीबूटियों की शब्दावली और रूपात्मक लक्षणों को विभिन्न ग्रंथों से एकत्रित किया गया था।

**अवलोकन और परिणाम:** अध्ययन में प्रयुक्त कार्यप्रणाली के आधार पर संदिग्ध सभी पंद्रह जड़ीबूटियों को संभव सीमा तक निश्चित किया गया है।

**निष्कर्ष:** सुरासादि गण जड़ीबूटियों की संदिग्धताओं को इसके वानस्पतिक पहचान के समानार्थक और रूपात्मक लक्षणों के माध्यम से स्पष्ट किया जाता है। इसके अतिरिक्त, इन जड़ीबूटियों की इनके चिकित्सकीय मूल्यों के साथ आवश्यक पुनर्मूल्यांकन पर और अधिक अध्ययन करने की आवश्यकता है।

**मुख्य शब्द:** आयुर्वेद, संदिग्ध जड़ीबूटियां, द्रव्यगुण, संदिग्ध द्रव्य, सुरासादि गण