The Medicinal Efficacy of 36 Padakas (drugs) in Agnipurāna

Siva Panuganti

Assistant Professor, MIT School of Vedic Sciences, MIT-ADT University, Loni Kalbhore, Pune, Maharashtra-412201,

Abstract

In Indic knowledge systems, the *purāṇas* are at the third hierarchical level, which carries the essence of Vedas. Though they are ancient, their importance is being substantiated (*purāpi navaṃ bhavati*) in the society by teaching Vedic way of lifestyle through moral stories, in which, science and technology were explained contextually. Those are encyclopedic in nature. For every mundane obstacle, there will be a solution in *purāṇas*. Presently, the entire world is suffering from COVID-19. Lacking immunity is the cause to be affected by this pandemic. Boosting immunity is one of the solutions to face this virus. During this pandemic, several traditional methods of immunity booster were practiced and resulted positively. In this juncture, interestingly, as a solution, a medicinal preparation is mentioned as a *rahasyavidya* (secret knowledge) in 140th *adhyāya* (*yuddhajayārṇava*) of *Agnipurāṇa*. In this preparation, 36 medicinal drugs were used, and it was also praised as *mṛtasañjīvani* and *sarvagohāriṇi*. Through classical literature, it is a difficult task to identify the drug and preparation method. So, in this study, the importance of 36 drugs will be highlighted and the medicinal efficacy of individual drugs will also be cross-referred from Ayurvedic materia medica along with their noted botanical names. This study may give scope to test this clinically. Similarly, it may encourage to study the *purāṇic* literature in scientific manner for welfare of the society.

Index Terms: Indic knowledge systems, *Agnipurāṇa*, *36 padakas, sarvarogaharini*, Ayurvedic materia medica

I. Introduction

Vedas are the source of knowledge (vedo'khilo dharmamūlam) [1]. For every scientific idea, there will be a fundamental reference in the Vedas. As the *purānas* are also conveying the essence of the Vedas, they are at the third level in Indic knowledge systems, and collectively, they are also being considered as pañcamaveda [2]. Though they are ancient, their importance is being substantiated (purāpi navam bhavati) in the society by teaching Vedic way of lifestyle through ethical stories. Such a lifestyle may balance a person's physical, psychic, social, and spiritual condition. There are 18 mahāpurānas, which are encyclopedic in nature. These scriptures (purānas) always support the harmonic environment between man and nature. Thus, each purāṇa contains the messages of environmental conservation [3]. In our shastras, the primary importance is given to physical fitness, because, the physical body is the instrument for all activities (śarīramādyam khalu dharmasādhanam) [4]. Since creation starts, every living thing getting a disease and getting rid of it is a common phenomenon. Lacking immunity is the primary cause to get a disease. Medicinal plants are playing a vital role in boosting immunity. The purānic literature describes all aspects of the medical system including plant science [5] and veterinary medicine [6]. Some of the medicinal preparations seem more unique than Ayurveda. Such preparation is found in *Agnipurāṇa*, one of the 18 major purānas. This was also praised as mrtasañjīvani and sarvagohārini. This medicine may be useful as an immunity enhancer in this pandemic COVID-19. There are 36 different medicinal herbs involved in this preparation, in this study, the importance of 36 drugs will be highlighted and the medicinal efficacy of individual drugs will also be presented from Ayurvedic materia medica along with their noted botanical names.

II. Materials and Methods

Studied *Agnipurāṇa* thoroughly and noted the medicinal preparation of 36 *padakas* (drugs). All 36 herbs are arranged in a tabular form. Referred several Ayurveda materia medica/lexicons and ENVIS website to equip the information of medicinal efficacy and noted botanical name to each herb. Checked the guidelines of 'Ayurveda's immunity-boosting measures for self-care during COVID 19 crisis' by the Ministry of AYUSH and noted some of the traditional immuno-boosters to justify this study. Similarly, relevant articles are studied and referred to in this regard.

III. Health Science in Agnipurāna

Agnipurāṇa is one of the 18 mahāpuranās. Its title itself indicates that it was narrated by Agni to Vaśistha. It contains 16000 slokas distributed in 383 Adhyayas. It has not only the compilation of health science information from various Ayurvedic treatises but also carries information regarding some gaps, secrets, and some issues which are not discussed in Ayurveda. For instance, the preparation of 36 padakas, etc. Basic principles of health, anatomy, physiology, gynecology, medicine, etc. are available in Agnipurāna which was referenced from Suśruta Samhita, Astanga Sangraha, Vrnda Madhava and Cakradatta, etc [7].

IV. Traditional immune boosters

According to Ayurveda, health depends on immunity (balādhiṣṭhānam ārogyam) [8] and food is the main factor to enhance immunity. Traditionally, in Indian cuisine, herbs and spices are used in cooking according to their nutritional benefits and their ability to strengthen our immune system. in General, the Indian kitchen itself is considered a small natural dispensary. According to the World Health Organization, around 80% of the world population uses herbal medicines for primary health care. There are certain popular herbs viz. guduchi, ashwagandha, garlic, turmeric, and ginger are used to boost immunity [9].

During COVID 19 crisis, the Ministry of AYUSH also gave guidelines for Ayurveda's immunity-boosting measures [10]. According to this, under general measures:

- drinking warm water daily,
- the practice of Yogasana, Pranayama, and meditation for at least 30 minutes every day
- spices like *haridrā*, *jīraka*, *dhaniyā* and *laśuna* are recommended in cooking.

Under Ayurvedic Immunity Promoting Measures:

- Take Chyavanprash 10gm (1tsf) in the morning,
- Drink herbal tea/decoction (*kvātha*) made from *tulasī* (Basil), *dālacīnī* (Cinnamon) *marīca* (Black pepper), *śuṇṭhī* (Dry Ginger) and Munakka (Raisin) - once or twice a day.
- Golden Milk- which is made up of half teaspoon *haridrā* (turmeric) powder in 150 ml hot milk once or twice a day.

During dry cough / sore throat:

- Steam inhalation with fresh *pudīnā* (Mint) leaves or *yavānikā* (Caraway seeds) can be practiced once a day.
- *lavanga* (Clove) powder mixed with natural sugar/honey can be taken 2-3 times a day in case of cough or throat irritation.

In the above measures, 99% of the ingredients are herbs that are limited and commonly used in our daily food and drinks not only for enhancing immunity but also for improving our digestive system. Interestingly, in *Agnipurāṇa*, there are 36 drugs mentioned and described a medicinal preparation out of those herbs and used it as *mṛtasañjīvani* and *sarvagohāriṇi*. This concept will be explained in detail further.

V. The medicinal Efficacy of 36 *Padakas* (drugs)

There is a concept of 'sadtrimsatpadakāni' (36 drugs) in 140th adhyāya (yuddhajayārṇava) of Agnipurāṇa [11], where all 36 different drugs are used in a medicinal preparation and used as sarvagohāriṇi. This knowledge was kept under rahasyavidya (secret knowledge) during the war. Presently, the entire universe is suffering from biowar with pandemic COVID 19, and the death rate is creasing day by day. There is no sufficient vaccine for it so far. At this juncture, this preparation is given scope towards knowing its medicinal importance. Ayurvedic lexicons like Bhavaprakasha [12], Raja Nighantu [13], and ENVIS website are followed to get the therapeutic information of each herb along with noted botanical names. The entire information is stated in the table below.

Table 1: List of 36 padakas (drugs) depicted from Agnipurāna along with their botanical names and therapeutic uses

| Plant/drug Name | Botanical name | Therapeutic uses |
|-----------------|--------------------------------|--|
| 1. harītakī | Terminalia chebula RETZ. | dīpanī (digestive), medhyā (memory enhancer), rasāyanī (rejuvenating), cakṣuṣyā (relieves eye diseases), āyuṣyā (improves longevity), bṛṃhaṇa (nourishes the body), anulomana (clears the channels), śvāsa-kāsa-prameha-arśaḥ kuṣṭha-śotha-udarakṛmīn, grahaṇaroga-vibandha-viṣamajvarān (relieves diseases like breathlessness, cough, diabetic, piles, skin diseases, swelling, stomach issues, dysentery, constipation, and severe fever) gulma-ādhmāna-vraṇa-cchardi-hikkā-kaṇṭha-hṛd-āmayān (relieves diseases like gastritis, swelling of the body, wound, vomition, hiccup, throat disease, and heart disease), kāmalā (jaundice), śūla (pain) ānāha (constipation), plīha (spleen), yakṛdgadam (liver disease), aśmara (gravel), mūtrakṛcchruṃ (strangury), mūtrāghātaṃ (urinary disease) - (B.P.) |
| 2. akṣī | Gymnema sylvestre R.BR. | dīpanaṃ, bhedi (purgative), avidāhi , śleṣmalaṃ (phlegmatic), vātanut (releves vata diseases) - (B.P.) |
| 3. dhātrī | Emblica officinalis GAERTN. | raktapitta (bile-blood), pramehaghnam (relieves diabetic), vṛṣyam (aphrodisiac), rasāyana (rejuvenating), tridoṣajit (relieves tridosha related diseases) - (B.P.) |
| 4. marīca | Piper nigrum | dīpanaṃ (digestive), kapha-vātajit (relieves kapha and vata diseases), pittakaraṃ (aggravates pitta), śvāsa-śūla-kṛmīnharet (relieves diseases like breathlessness, pain,) - (B.P.) |

| 5. pip | palī | Piper longum L. | dīpanī (digestive), vṛṣyā (aphrodisiac), rasāyanī (rejuvenative), vātaśleṣmaharī (releves vata and pitta diseases) recanī (evacuative), śvāsa-kāsa-udara-jvarān hanti (relieves diseases breathlessness, cough, stomach pain, and fever) kuṣṭha-prameha-gulma-arśa-plīhā-śūla-āmamārutān, pittapraśamanī (relieves diseases like skin diseases, diabetic, gastritis, piles, spleen, pain, indigestion and pitta diseases) - (B.P.) |
|---------|---------------|--|--|
| 6. śip | hā (dravantī) | Croton polyandrum | jvaraghnī(releves fever) kṛmihā (removes virus) śūlaśamanī (releves pain), rasāyanī (rejuvenative) - (R.N.) |
| 7. val | hni | Plumbago zeylanica L. | pācana (digestive), grahaṇa-kuṣṭha-śotha-arśa-kṛmi-kāsanut vāta-śleṣma-hara grāhī-vātā-arśa-śleṣma-pittahṛt (releves diseases like dysentery, skin diseases, piles, kapha and pitta diseases) - (B.P.) |
| 8. śur | nțhī | Zingiber officinale ROSC. | āmavātaghnī (relieves vata diseases), pācanī (digestive), kapha-vāta-vibandhanut (relieves diseases like kapha, vata and constipation) vṛṣya (aphrodisiac), svaryyā (good for throat), vami-śvāsa-śūla-kāsa-hṛdāmayān hanti (relieves diseases like vomiting, breathlessness, pain, cough and heart diseases), ślīpada-śopha-arśa, ānāha- udaramārutān, vibandhabhedinī (relieves diseases like elephantiasis, tumor, piles, epistasis, stomach gases, and constipation diseases) - (B.P.) |
| 9. pip | opalī (mūla) | Piper longum L. | dīpanam (rejuvenating), pācanam (digestive), pittakaram (aggravates pitta), kapha-vāta-udarāpaham (releves diseases like kapha, vata and stomach diseases), ānāha-plīha-gulmaghnam (relieves diseases like epistasis, spleen, and gastritis), kṛmi-śvāsa-kṣayāpaham (relieves virus, breathlessness, and tuberculosis diseases) - (B.P.) |
| 10. guạ | lūcī | Tinospora cordifolia (WILLD.) HOOK.F. & THOMS. | rasāyanī (rejuvenating), saṃgrāhiṇī (relieves dysentery), balya (immune booster), agnidīpinī (improves digestive fire) doṣatraya-āma-tṛṭ-dāha-meha-kāsa-pāṇḍutām-kāmalā-kuṣṭha-vāta arśa-jvara-kṛmivamīn haret (relieves diseases like tridosha related diseases, indigestion, dehydration, diabetic, cough, jaundice, libidinous, skin disease, vata disease, piles, fever, and virus) - (B.P.) |
| 11. vac | ā | Acorus calamus L. | vibandha-ādhmāna-śūla-ghnī (relieves diseases like constipation, swelling of body and pain), śakṛt- mūtra-viśodhinī |

| | <u>'</u> | |
|-----------------|--|--|
| | | apasmāra-kapha-unmāda-anilān (relieves constipation, urinary disorders, purifies channels, cures epilepsy, kapha disease, insanity, and pitta diseases) - (B.P.) |
| 12. nimbaka | Azadirachta indica A. JUSS. | grāhī (relieves dysentery), agnivātanut (treats pitta and vaata diseases), tṛṭ- kāsa-jvara-aruci-kṛmi-praṇut (cures diseases like dehydration, cough, fever, appetite and removes microbes), vraṇa-pitta-kapha-cchardi-kuṣṭha-mehanut (treats wound, pitta disease, kapha disease, omission, skin disorder, and prameha) vātalaṃ (aggravates vata), sarvārocaka-kuṣṭhanut-gulmārśa (relieves disorders like appetite, skin disease, gastritis, and piles) - (B.P.) |
| 13. vāsaka | Adhatoda vasica NEES | vātakṛt-svaryaḥ, kapha-pitta-nāśanaḥ śotha-tṛṭ- hṛt śvāsa-kāsa-jvara-cchardi-meha-kuṣṭha- kṣayāpahaḥ - (B.P.) |
| 14. śatamūlī | Asparagus racemosus WILLD. | rasāyanī, medhyā, netryā (cures eye problems), gulma-atisārajit (diarrhoea) śukra (improves virility), stanyakarī, valyā (cures fungus), vātapitta-śothajit medhyā, vṛṣyā, arśa-grahaṇī-āmayān, tridoṣaghna - (B.P.) |
| 15. saindhava | Salt | dīpanaṃ, rucyaṃ, vṛṣyaṃ, tridoṣahṛt - (B.P.) |
| 16. sinduvāraka | Vitex negundo Linn. | kapha-vāta-kṣayāpahaḥ, kuṣṭha-kaṇḍūtiśamanaḥ, śūlahṛt-kāsasiddhidaḥ - (B.P.) |
| 17. kaṇṭakārī | solanum xanthocarpum | pācanī, kāsa-śvāsa-jvara-kapha-anilān pīnasaṃ (cures catarrh) pārśvapīḍā (removes back pain)- kṛmi-hṛdāmayān, śukrasya recanaṃ, bhedi, kapha-marut-kaṇḍū-kāsa-krimi-jvarān-hanyāt, garbhakāriṇī (makes conceive) - (B.P.) |
| 18. gokşura | Pedalium murex L | balakṛt (boosts immunity), vastiśodhanaḥ, dīpana, vṛṣya, puṣṭida (improves energy), aśmarīharaḥ, prameha-śvāsa-kāsa-hṛdroga- vātanut - (B.P.) |
| 19. bilva | Aegle marmelos (L.) CORREA EX. SCHULTZ | grāhī, vātaśleṣmahara, balya (immune booster), pācana - (B.P.) |
| 20. punarnavā | Trianthema portulacastrum L. | pāṇḍughnī, dīpanī, śophā-anila-śleṣma-harī vraṇya-udara-praṇut - (B.P.) |
| 21. balā | Sida cordifolia | bala (immune booster) -kāntikṛt (rejuvenator), grāhi, samīra-pitta-nāśanam - (B.P.) |

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|----------------------------------|----------------------------|--|
| 22. eraṇḍamuṇḍī (eranda mūla) | Ricinus Communis Linn. | Vatasamaka (releaves from vata diseases), kaphsamaka (releaves from kapha diseases), krimighna (removes virus), mutrakriccha (clears urinary disorders), arsh-gulma-basti shulhara, yakrit-pliha-udara-vibandh-amavathara, amapachaka [K.N] |
| 23. rucaka | Crocus sativus L. | śira-vraṇa-jantujit, vamiharaṃ, varṇyaṃ doṣatrayāpaham - (B.P.) |
| 24. bhṛṅga | Cinnamomum cassia | kaphavātaghnam, kaṇḍū-aruci-nāśanam hṛd- vastiroga(removes spasm in the bladder)-arśa- kṛmi-pīnasaśukra-hṛt - (B.P.) |
| 25. kṣāra | Adenanthera pavonina L. | used in diarrhea, haemorrhage from the stomach, haematuria), anti-inflammatory (in rheumatic affections, gout). Seeds— anticephalic; also used for the treatment of paralysis. A decoction is given in pulmonary affections. [14] |
| 26. parpaṭa | Fumaria indica PUGSLEY | pitta-bhrama (treats dizziness) -tṛṣṇā (treats dehydration)-kapha-jvarān hanti, saṃgrāhī, dāhanut-vātala - (B.P.) |
| 27. dhanyāka | Coriandrum sativum L. | vṛṣyaṃ, mūtralaṃ, dīpanaṃ (improves digestion), pācanaṃ, jvara-ghnaṃ, rocakaṃ grāhi, tridoṣanut tṛṣṇā- dāha-vami-śvāsa-kāsā- āmarśaḥ kṛmipraṇut, pittanāśi - (B.P.) |
| 28. jīraka | Cuminum cyminum L. | dīpanam, saṃgrāhi, pittalaṃ, medhyaṃ, garbhāśayaviśuddhi-kṛt (clears pregnancy issues), jvaraghnaṃ, pāvanaṃ, vṛṣyaṃ, balyaṃ (immune booster), rucyaṃ, kaphāpaham, cakṣuṣyaṃ, pavana- ādhmāna-gulma-ccharda- atisārahṛt - (B.P.) |
| 29. śatapuṣpī | Anethum sowa KURZ. | dīpanam, saṃgrāhi, pittalam, medhyam, garbhāśayaviśuddhi-kṛt (clears pregnancy issues), jvaraghnam, pāvanam, vṛṣyam, balyam (immune booster), rucyam, kaphāpaham, cakṣuṣyam, pavana- ādhmāna-gulma-ccharda- atisārahṛt - (B.P.) |
| 30. javānikā (yavānikā) | Trachyspermum ammi | pācanī, rucyā (improves taste), dīpanī, pittalā- śukraśūlahṛt□ vāta-śleṣma-udara- anāha- gulma-plīha-kṛmi-praṇut - (B.P.) |
| 31. viḍaṅga | Embelia ribes BURM.F. | kṛmighna, vahni karaṃ, śūla-ādhmāna-udara- śleṣma-kṛmi-vāta-vibandhanut - (B.P.) |
| 32. vacā (mahābharīvacā) | Alpinia galanga | kapha-kāsanut, susvaratvakarī (improves voice), rucyā, hṛt-kaṇṭha (cures throat problems) - mukha-śodhinī - (B.P.) |

| 33. khadira | Acacia catechu (L.F.) Willd. | dantya (good for tooth) kaṇḍū-kāsa-arucipraṇut (cures tastelessness), medoghna, kṛmi-meha-jvara-vraṇān śvitra-śotha-āma-pitta-pāṇḍu-kuṣṭha-kaphān haret - (B.P.) |
|----------------|------------------------------------|--|
| 34. kṛtamalā | Cassia fistula L. | jvara-hṛdroga-pitta-vāta-udāvarttaśūlanut (treats menstrual discharges issues), rucyaṃ, kuṣṭha-pitta-kaphāpaham, koṣṭhaśuddhikaraṃ (cures stomach issues) - (B.P.) |
| 35. haridrā | Curcuma longa L. | kṛmighnī, kapha-pittanut, varṇyā (improves brightness in the skin) tvagdoṣa (cures skin disease) -meha (good for diabetics)-śotha- pāṇḍu-vraṇāpahā (heals wound) - (B.P.) |
| 36. siddhārtha | Brassica alba (L.) Brassicaceae | kapha-vātaghna (cures kapha and vata diseases), raktapitta-agnivardhanaḥ (treats bile- blood problem and improves digestion), jayetkaṇḍūṃ, kuṣṭha-koṣṭha-kṛmi-grahān (R.N.) |

VI. Discussion

There are 36 medicinal drugs involved in this preparation, in which one is Saidhava (salt) and the remaining 35 are herbs. The herbs *haridrā*, *jīraka*, *dhaniyā*, *śuṇṭhī* and *yavānikā* are only matching with the list stated by AYUSH. According to *Agnipurāṇa*, the combination of 36 is useful not only for an immune booster but also works on various diseases. Although the drugs/herbs are common in the Ayurveda and *Agnipurāṇa*, the combination and the preparation are unique.

While gathering the medicinal information from Ayurveda lexicons and materia medica, in some places, there was a lot of confusion in multiple entries for one herbal entity. For instance, the *balā* (*Sida cordifolia*) herbs have three types viz. *mahābalā* (*Sida rhombifolia*) and *atibalā* (*Abutilon indicum*), *nāgabalā* (*Grewia hirsuta*). Similarly, *kaṇṭakārī* has two types such as *vārtākī* (*Solanum indicum*) and *kaṇṭakārī* (*Solanum xanthocarpum*). There are two similar terms repeated at 9th (taken as *pippalīmūla*) and 32nd (considered as *mahābharīvacā*) places for pippalī and vacā respectively. The medicinal '*eraṇḍamuṇḍī*' is considered as *eranda mūla* (*Ricinus Communis Linn.*) [15].

The preparation method is described in brief. But it is not clear which part of the herb needs to be used. The medicine can be taken as $c\bar{u}rna$ (powder) or $vatik\bar{a}$ (tablet) or avaleha (lickable item) or $kas\bar{a}ya$ (decoction) or modaka (edible item) or gudakhandaka (sweet item). The medicine will be $mrtasanj\bar{j}vana$, when it is taken with madhu (honey) or dhrta (ghee) or ghrtantaila (ghee oil) [16]. The dosage should be karsardham (8 grams) or karsamekam (16 grams) or palardham (32 grams) or palamekakam (64 grams) [17].

According to the individual curative factors, there are different combinations stated within 36. As they mostly act as *dīpanas* (digestive fire improvers), *rasāyanas* (rejuvenators), *balavardhakas* (immune boosters), the first nine herbs cure all diseases. The amalgamation of 1 to 8 and 26 to 27 pacify vata and 4 to 6, 5to 8 and including the 15th one cure kapha diseases. Similarly, the combination of 1 to 3, 6 to 9 herbs and the 11th one is useful in *grahaśānti* (planetary influence) [18]. According to the information on medicinal usage, 70% of medicinal drugs are working on *śvāsa* (breath related issues) and *kāsa* (cough-related issues) which are the majorly identified symptoms in COVID 19. Most of the drugs are working on *prameha* (diabetic Mellitus)As as it is a gifted disease due to this pandemic,.

VII. Conclusion

Undoubtedly, the *purāṇas* facilitate solutions for current mundane problems, if we study and scientifically look at them. The present study is only focused on bringing out this ignored scientific practice and exploring it with supportive medicinal information from Ayurveda to show its medicinal importance in this COVID 19 pandemic. This preparation is unique and not matching with any mentioned in Ayurveda. Some terminological issues need to be classified with Ayurveda and botany experts. The present work may give rise to study this concept clinically to find further insights. Similarly, this may motivate the young traditional students and scholars to study the *purāṇic* literararure in a scientific manner.

Abbreviations

- 1. B.P. Bhavaprakasha
- 2. R.N. Raja Nighantu
- 3. K.N. Kaiyadeva Nighantu

References

- Narayana Ram Acharya, Manusmriti with Manvarthamuktavali of kulluka, Satyabhamabai Panudrang, Nirnaya Sagar Press, Bombay, Adhyaya 2, Sloka 6, p.33
- 2. Sudhama Sinha, Chandogyopanishad (Gudarthaprakashika), Rohatasamandal, Sri Lakshminarayana yajnasamiti, Bodhagaya, Adhyaya 7, Khand 7, vakyam 1, p.740
- 3. Renugadevi R, Environmental Ethics in Hindu Vedas and Puranas in India, African Journal of History and Culture (AJHC) Vol. 4(1), pp. 1-3, January 2012
- 4. Mahendra Pratap Shastri, Kalidas Kumarasambhavam, Canto V, Ram Narain Lal, Publisher and bookseller, Allahabad, 1941, sloka 33. p.85
- 5. Dhananjay Vasudeo Dwivedi, Importance of Plants as depicted in Puranas, Indian Journal of History of Science, 52.3 (2017) 251-274
- 6. SK Jain et al., Some folk herbal medicines for possible use in Veterinary Practices, Indian Journal of Traditional Knowledge, Vol.2(2), April 2003, pp. 118-125
- 7. P V V Prasad, Medical information in Agni Purana, Bull Indian Inst Hist Med Hyderabad, Jan-Jun 2007;37(1):87-106.
- 8. Anna Moreswar Kunte, Ashtanga Hridaya, Pandurang Jawaji, Nirnaya Sagar Press, Bombay, 1939, Nidana Sthana, Adhyaya 2, p.449,
- 9. Sunita Singh, Magical ayurvedic spices and herbs that can boost our immunity, MOJ Food Process Technols. 2020;8(3):99–102.
- 10. Ministry of AYUSH, Ayurveda's immunity boosting measures for self care during COVID 19 crisis,
- 11. Dut M N., Agnipurana, Cosmo Publications, New Delhi, 1987, adhyaya 140 (yuddhajayarnava), Sloka.2-5, Vol. 8, p. 1054
- 12. Amritpal Singh, Bhavaprakasha (Sanskrit text with English translation), Choukhamba Orientalia, Delhi, 2007

- 13. Indra Deva Tripati, Raja Nighantu with Dravyagunaprakashika Hindi Commentary, Chaukhamba Krishanadas Academy, Varanasi 2006
- Khare C P, Indian Medicinal Plants an Illustrated Dictionary, Springer Science+Business Media, LLC, 2007, p.18
- 15. Sharma P.V., Kaiyadeva Nighantu (Patyāpatyavibodhika), Chaukhamba Orientalia, Varanasi 2009
- Dut M N., Agnipurana, Cosmo Publications, New Delhi, 1987, adhyaya 140 (yuddhajayarnava), Sloka.7 Vol. 8, p. 1054
- 17. Dut M N., Agnipurana, Cosmo Publications, New Delhi, 1987, adhyaya 140 (yuddhajayarnava), Sloka.9-10, Vol. 8, p. 1054
- 18. Dut M N., Agnipurana, Cosmo Publications, New Delhi, 1987, adhyaya 140 (yuddhajayarnava), Sloka.11-16, Vol. 8, p. 1055