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CONCEPTUAL RECAPTURE OF *APAMARGA* (*Achyranthes aspera* Linn.)

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ABSTRACT

Aim: To collect and comprehensively review information available regarding the medicinal use of *Apamarga*. **Background:** *Apamarga* [*Achyranthes aspera* Linn.] *h*as been used in traditional medicine for the treatment of different disease. The entire *Achyranthes aspera* plant, including the seeds, contains alkaline substances, particularly potash. The chemical components of different plant parts have been identified and isolated. Though there are few review articles available on this plant but no review has comprehensively covered all aspects of *Apamarga*. **Materials and Methods:** This review is in a narrative format and done from literature and publications relevant to *Apamarga* that were identified through a systematic search of major computerized medical databases. **Review Results:** *Apamarga* [*Achyranthes aspera* Linn.], was reviewed from all *samhitas* and *Nighantu's* and from more than 55 research articles for medicinal uses and other important aspects. **Conclusion:** *Apamarga* is concluded to have more than 20 *Samhita* based indications *Kandu, Kushtha, Visha, Vrana, Karna-Roga, Netra-Roga, Aruchi, Chardii, Udararoga, Krmi, Hridroga, Pandu, Gandamala, Amavata, Kasa, Shwasa, Mutraghata, Visuchika, Sidhma, Nidranasa, Ashmari, Arsha, Kaphaja Timira, Praklinnavartma, Paripotaka, Pleehodara, Apachi, Sharkara* and *Utpataka. Apamarga* also possesses Antimicrobial, Lavicidal, Antifertility, Anti-cancer, Immunostimulant, Hypoglycaemic, Hypolipidemic Activity, Anti-inflammatory, Antioxidant Activity, Anti-Asthmatic, Diuretics, Anti-arthritic, Activity for Wound Healing, Cardiac Activity, Analgesic and Antipyretic Activity. **Clinical Significance:** *Samhita* based indications of *Apamarga* are compared with Article concluded effect and then areas of further research are identified in drug *Apamarga*.

KEYWORDS: *Apamarga, Achyranthes aspera, Rakshoghna, Kushthaghna, Paaproga, Yatudhan Krimi.*

INTRODUCTION

Apamarga (Achyranthes aspera Linn) is very important ayurvedic medicinal plant. It is known as *Apamarga* Sanskrit name, prickly chaff flower in English. It belongs to the family *Amaranthaceae*. This medicinal plant found as a weed through India up to 900 m. Though almost all of its parts are used in traditional system of medicines, seeds, roots, and shoots are the most important parts, which are used medicinally.[1]

Apamarga is an erect stiff, annual-perennial herb, often will woody base, occurs naturally throughout India. Plant is found common in waste places roadsides, hedges, gardens, fields or farms, fore edges, forest clearings and other places. It is commonly known as Chaff Tree, Prickly- chaff Flower, Rough-chaff Tree.[2]

MATERIALS AND METHODS

This literature review was compiled from ayurvedic text, relevant modern science books, research published articles both from print and electronic resources. Computerized medical databases E- Samhita, PubMed, Google Scholar, Medline, Embase, Mantis were searched using these keywords: *Apamarga, Achyranthes aspera, Rakshoghna, Kushthaghna* etc. Results of these searches were reviewed with respect to medicinal uses of *Apamarga* and other important aspects.

REVIEW RESULTS

1. *Vedic* Kala

A. *Apamarga* in Veda

(a) *Rigveda*- No mention of *Apamarga* was found in the *Rigveda*.[3]

(b) *Yajurveda*- *Saktu*, or the powder of *Apamarga*, is utilized in *Hawan* for the purpose of *Rakshoghna* property in many *Yajurvedic Samhitas*. It must be utilized once the water content has been eliminated. This means that no other plant has the ability to remove water from our bodies, so it should be utilized after drying. *Papanashan, Mritunashana*, and *Duhswapna nasana* are among its properties.[4]

(c) *Saamveda*- In *Saamved*, there is no reference of *Apamarga*.

(d) *Atharvaveda*- According to the etymology given by *Sayana, Apamarga* is a plant that drives away the body's vitiated *Doshas*, and the *Atharvaveda* cited it extensively. It is referred to as *Dourbhagya nasana* and *Anapatyanasana* by the *Paippalada* school of *Atharvaveda*. This points to the property of *Kushthaghna.*[5]

Due to its hundreds of characteristics and ability to eradicate all diseases, *Apamarga* is regarded as the lord of all plants. *Apamarga* is used to cure conditions brought on by hunger, thirst, sterility and other factors.[6] *Apamarga* prevents *Yatudhan Krimi* and eradicates illnesses like *Kshetriya roga*.[7] According to *Sayana* and the indigenous tradition, it is an unusual term that denotes a condition that starts with consumption, skin conditions, and epilepsy, and is derived from the mother's or father's limbs. It can be cured in the body of a son or grandson.[8] *Apamarga* eliminates the illnesses that arise from sitting next to someone who has black teeth, infected nails, or a deformity.[9] The *Sansargaja Kushtha* is indicated by this *mantra.*

Synonym of *Apamarga* in *Atharvaveda* representing its property-[10] *Satyajit, Sahmana, Shapathyavani, Punahsara, Vibhindati, Shatshakha, Pratchinphala*.

B. *Apamarga* in *Brahman Granths*

(a) *Sathpatha Brahman*- According to *Sathpath Brahman*, *Apamarga* plant is renowned for eliminating the *Rakshas*

and fiends from the quarters. It is recommended to consume *Apamarga* grains with a dipping spoon made of *Vikankat (Flacourtia sapida)* or *Palasa (Butea monosperma)* wood. The backward impact of *apamarga* means that whomever does anything to him pitches backward. Additionally, *Apamarga* is renowned for eradicating sin, remorse, witchcraft and illness.[11-12]

(b) ***Taitariya Brahman*-** According to *Taitariya Brahman, Apamarga homa* is performed in order to get rid of *Rakshasa Krimi*. This suggests that it has antibacterial properties.[13]

C. *Apamarga* in different *Sutra*

(a) ***Sankhayan Grihya Sutra*-** Following the student's hair ends being chopped off, the hairs are tossed with rice, mustard and sesamum seeds, *Apamarga* flowers, and *sadpushpi* flowers. A handful of *Shami* leaves, *Sirisha, Udumbar, Kusha* shoots and jujube fruits are supposed to have clod out a furrow on the dirt in the morning.[14]

(b) ***Gobhila Grihya Sutra*-** The following plants and tree branches should be present in the morning following the morning oblation sacrifice: *Apamarga, Sirisha, Virana* grass, *Shami* (branch), *Badari* branch bearing fruits and *Darbha* grass.[15]

(c) ***Vishnu Dharm Sutra*-** *Apamarga* is one of the plants mentioned in *Vishnu Dharmsutra* for tooth cleansing. Other plants include *bilva, kukubha, nimba, badar, karanja, arka*, and *khadir*.[16]

D. Apamarga in Puran

(a) ***Garun Puran*-** The *Purva Khand (Aachar Kanda), Uttar Khand (Dharma Kanda),* and *Brahma Kanda* are the three primary Khands into which this Puran is separated. Apamarga is stated in *Grahshanti Nirupan* for *Buddha graha* in the *Aachar Kanda* of the *Garun Puran*. When *Umabhadra* is worshipped in the month of *Aashad*, the god is offered *dantkashtha* of *Apamarga.* On Sunday, the patient with *Jwar* has the root of *Apamarga* knotted with a scarlet thread and rolled around their waist seven times. In order to keep the eyes clean, the roots of *Apamarga, Sendha Namak, Sarsap* tail, *Dugdha,* and *Kaanji* are crushed in *Tamrapatra* and their *Anjana* applied to the eyes. *Ajirna-Shoola* is cured by *Samudra lavana* and the root of *Apamarga*. Along with other plants including *Kadamba, Bilva, Khair, Kaner, Arjun, Karanja, Arka, Jamun, Mahua, Sirisha, Goolar* etc. *Apamarga* is used as *Dantdhavan*.[17]

(b) ***Brahmvaivarta Puran*-** *Brahma Khand, Prakriti Khand, Ganpati Khand* and *Shri Krishna Janma Khand* are the four *Khand* into which this literature is separated. *Apamarga* is regarded as one of the greatest *Dantdhavan dravyas* in *Brahma Khand*. Other plants like *Sinduvar, Amra, Karvir, Khair, Sirisha, Jati, Punnaga* and others are also utilized as *Dantdhavan*.[18]

(c) ***Skanda Puran*-** The *Skanda Puran* got its name because *Lord Skanda* spoke it. It comes in two varieties: *Samhitatmak* and *Khandatmak.* There are seven *Khand* in the *Khandatmak Skanda Puran*. They are *Prabhas, Avanti, Kaasi, Vaisnav, Brahma* and *Maheswar*. There are six *Samhitas* in the *Samhita* section. They are *Brahma, Saur, Vaisnav, Sanatkumar, Sankar* and *Soota*. Along with other plants including *Bilva, Madar, Laal Kamal, Dhatur, Kaner, Sanai, Tulsi Juhi, Champa* and others, *Apamarga* is offered to *Lord Shiva* during worship in *Brahmottar Khand*.[19] According to *Kaasi Khand*, the branches of eleven different plants are *utilized* for *Dantdhavan* in succession, from *Baishakha* to *Phagun*. Their names include *Dadim, Dadim, Udumbar, Karjur, Beejpur, Jambu, Apamarga, Khadir, Jati, Amra, Kadamba* and *Plaksha*.[20]

(d) ***Kurma Puran*-** Lord *Kurma* spoke this passage. It is said that one of the twigs utilized for *Dantdhavan* is *Apamarga. Maalti, Bilva, Karveer* and various latex-secreting trees are among the other flora. *Dantkashtha* ought to be as thick as the middle finger in this situation.[21]

(e) ***Bhavisya Puran*-** There are four primary Parva in this text. They are *Madhyam, Uttar, Pratisarga* and *Brahma.* There are three *Khand* in *Madhya, Parva* and four *Khand* in *Pratisarga Parva*. When *Visha* penetrates the skin, *Brahma Parva* indicates *Apamarga. Visha* has penetrated the skin when our eyes go black and we feel a burning feeling throughout our body. In order to counteract the negative effects of *Visha,* the roots of *Arka, Apamarga, Tagara* and *Priyangu* are crushed and used. For *Budha Grahshanti, Apamarga* is utilised. *Aswatha* for *Brihaspati, Udumbar* for *Sukra, Shami* for *Shani, Durva* for *Rahu, Kusa* for *Ketu, Arka* for *Surya, Pal*asa for *Chandra, Khadir* for *Mangal* and *Apamarga* for *Budha*.[22-23]

(f) ***Matsya Puran*-** The text's connection to the *matsya avtar* of *God Vishnu* is what gave it its name. During worship, *Apamarga* is utilized for *hawan* purposes. *Aswatha, Shami, Udumbar* and *Palasa* are other plants that serve the similar function.[24]

E. ***Apamarga* in other ancient *Granths*-** *Apamarga* is utilized for *Dantdhavan* in *Saam Vidhan, Yagyavalk Siksha* and *Manduki Siksha*.[25]

2. Samhita Kala- *Apamarga's* beneficial medical properties have been described numerous times throughout the "*Brihatrei."*

(a) ***Charak Samhita*-** *Apamarga* is listed in the *Sirovirechana dravyas (Charak Sutrasthana* 2/3), according to *Acharya Charak*. The seeds known as *Apamarga Tandula* are used for this purpose. *Acharya Charak* named the chapter "*Apamarga Tanduliya*" because of its significance. The function of *apamarga* seeds is *Kshudha naas (Charak Sutrasthana* 2/33). The drug *Apamarga* has been placed in the *Vamanopaga (Charak Sutrasthana* 4/23) and *Sirovirechanopaga Mahakashaya (Charak Sutrasthana* 4/27). For the purpose of *Sirovirechana* after doing *Vaman* and *Virechana* karma it is advised to use *Shaikharik Kashaya* for the purpose of cooking, drinking, taking bath etc. (*Charak Vimansthana* 7/19). For the purpose of *Sirovirechana* both seeds and roots of *Apamarga* is used (*Charak Vimansthana* 8/151). For *Punsavana karma* in the form of *Jivakadi kalka, Apamarga* is utilised. In *Pippalyadi Varti (Charak Sidhisthana* 9/58) and *Baladi Yapan basti (Charak Sidhisthana* 12/9), *Apamarga* is also utilized as one of the *Uttarbasti dravyas*. In compound compositions intended to treat *Kushtha, Rajyakshma* and *Unmada, Charak* has referenced *Apamarga* for medicinal purposes. *Swaas, Hikka, Udar Roga, Apasmara* and so forth. The table below lists the several formulations of *Apamarga* that are discussed in the *Charak Samhita*.[26,27,28]

Table-01: *Apamarga* references in *Charaka-Samhita.*

S.No.	*Formulation*	Indications	Uses (Int./Ext.)	References
1.	***Kushthaghna Yoga***	*Kushtha*	Ext.	*Ch. Chi. 7/124*
2.	***Jivantyadi churna***	*Rajyakshma*	Ext.	*Ch. Chi. 8/175*
3.	***Apamargadi varti- Anjana***	*Unmada*	Ext.	*Ch. Chi. 9/66*
4.	***Mahapanchgavya ghrut***	*Apasmara*	Ext.	*Ch. Chi. 10/18*
5.	***Triphaladi tail - Nasya***	*Apasmara*	Int.	*Ch. Chi. 10/44*
6.	***Agnimanthadi tail***	*Udar roga*	Int.	*Ch. Chi. 13/171*
7.	***Muktadya churna***	*Hikka-Swaas*	Int.	*Ch. Chi. 17/126*
8.	***Agastya Haritaki***	*Kaash*	Int.	*Ch. Chi. 18/57*

Note: (*Ch.Chi – Charak Chikitsa-sthana)*

(b) ***Sushruta Samhita*-** When creating *Pratisarniya Kshar, Acharya Sushruta* made reference to the medication *Apamarga (Susruta Sutrasthana* 11/12). *Apamarga* is one of the *Udsadana dravyas* for *Vrana* that *Sushruta* has stated *(Susruta Sutrasthana* 36/31). In *Sirovirechana dravyas (Susruta Sutrasthana* 39/6), *Tikta varga (Susruta Sutrasthana* 42/22) and *Arkadi gana (Susruta Sutrasthana* 38/16), he preserved *Apamarga. Apamarga* is a component in the following formulations and is given for the treatment of a variety of illness.[29-30]

Table-02: *Apamarga* references in *Sushruta-Samhita.*

S.No.	Formulation	Indications	Uses (Int./Ext.)	References
1.	***Kalyanaka lavana***	*Vata vyadhi*	*Int.*	*Su. Chi. 4/32*
2.	***Apamarga moola with tandulodak***	*Arsha*	*Int.*	*Su. Chi. 6/13*
3.	***Tiladi Kshar***	*Ashmari*	*Int.*	*Su. Chi. 7/22*
4.	***Apamarga Kshar***	*Plihodar*	*Int.*	*Su. Chi. 14/13*
5.	***Apamarga beeja***	*Kaphaja Nadi vrana*	*Ext.*	*Su. Chi. 17/25*
6.	***Suvarchikadi tail***	*Karnapali vardhana*	*Ext.*	*Su. Chi. 25/26*
7.	***Amrit sarpi***	*Sarp vish*	*Int.*	*Su. Ka. 6/12*
8.	***Agastya avleha***	*Kaash*	*Int.*	*Su. U. 52/43*
9.	***Panchgavya ghrut***	*Atishar*	*Int.*	*Su. U. 61/34*

Note: (Su. Chi – Susruta Chikitsa-sthana, Su. Ka – Susruta Kalpa-sthana, Su. U – Susruta Uttar-tantra)

(c) ***Ashtanga Samgraha***- According to *Acharya Vagabhatta, Dhoompana* combined with *Apamargadi yoga* is utilized to cure illnesses brought on by burning *vish*-containing food (*Ashtanga Samgraha Sutrasthana* 8/22). *Apamarga* has been preserved in *Krimighna Mahakashaya (Ashtanga Samgraha Sutrasthana* 15/20), *Arkadi gana (Ashtanga Samgraha Sutrasthana* 16/22), *Syamadi gana (Ashtanga Samgraha Sutrasthana* 16/39), *Vamana (Ashtanga Samgraha Sutrasthana* 14/3), *Virechana (Ashtanga Samgraha Sutrasthana* 14/4), and *Sirovirechana dravyas (Ashtanga Samgraha Sutrasthana* 14/6). According to *Ashtanga Samgraha Sutrasthana* 18/23, he stored it in *Tikta dravya skandha. Madhyam Kshar* is made with *Apamarga (Ashtanga Samgraha Sutrasthana* 39/10). According to *Ashtanga Samgraha Sutrasthana* 1/6, *Apamarga* is used to prepare *Phalpippaliadi kashaya* in order to retain *Madanphal* in it. *Kshaya, Swaas, Kaash, Hikka, Ashmari, Gulma, Agnimandya, Kushtha, Vatashonit, Unmada, Apasmara, Timira, Siroroga* and other ailments are among the many ailments he indicated that this medication can treat. The following table lists the *Apamarga* formulations.[31,32,33]

Table-03: *Apamarga* references in *Astanga-samgraha.*

S.No.	Formulation	Indications	Uses (Int./Ext.)	References
1.	***Agastya leha***	*Kshaya- Kaash*	*Int.*	*A.S.Chi. 5/83*
2.	***Muktadi leha***	*Swaas- Hikka*	*Int.*	*A.S.Chi. 6/45*
3.	***Jivantyadi udvartana***	*Rajyakshma*	*Ext.*	*A.S.Chi. 7/107*
4.	***Pashanbhedadi ghrut***	*Ashmari*	*Int.*	*A.S.Chi.13/11*
5.	***Tiladi leha***	*Ashmari*	*Int.*	*A.S.Chi.13/17*
6.	***Yavaniadi churna***	*Gulma*	*Int.*	*A.S.Chi. 16/15*
7.	***Parijatadi kwatha***	*Agnimandya*	*Int.*	*A.S.Chi.17/34*
8.	***Varshabhuadi kshir***	*Aamdosh*	*Int.*	*A.S.Chi.19/4*
9.	***Lakshadi churna***	*Kushtha*	*Int.*	*A.S.Chi.21/35*
10.	***Apamargadi tail***	*Sidhma*	*Ext.*	*A.S.Chi.21/64*
11.	***Sarjarasadi tail***	*Paalipak*	*Ext.*	*A.S.U. 22/51*
12.	***Saraladi tail***	*Krimij Siroroga*	*Int.*	*A.S.U. 28/22*

Note: (A.S.Chi. Ashtanga Samgraha Chikitsa-sthana, A.S.U- Ashtanga Samgraha Uttar-tantra)

(d) ***Sarangadhar Samhita***-*Apamarga* has received advice from *Acharya Sarangadhar* regarding ailments such as *Ashmari, Raktarsha, Nasarsha, Badhiryi* and others. In *Varunadi Gana*, which is *kaphameda nashak*, he maintained *Apamarga (Sharangdhar Madhyam Khanda* 2/130). *Apamarga* seeds are utilised as a *bhavana dravya* of *Grahanikapata rasa (Sharangdhar Madhyam Khanda* 12/249) and for *Parada marana (Sharangdhar Madhyam Khanda* 12/35). The following table lists the various *Apamarga* formulations.[34,35]

Table-04: *Apamarga* references in *Sarangadhar Samhita.*

S.No.	Formulation	Indications	Use (Int./Ext.)	References
1.	***Virtarvadi gana kwatha***	*Ashmari*	*Int.*	*Sha.Ma. 2/105*
2.	***Apamarga kalka***	*Raktarsha*	*Int.*	*Sha.Ma. 5/19*
3.	***Agastyaharitaki avaleha***	*Kaash*	*Int.*	*Sha.Ma. 8/31*
4.	***Grihadhoom tail***	*Nasarsha*	*Ext.*	*Sha.Ma. 9/184*
5.	***Marichadi lepa***	*Linga- Stana Vriddhi*	*Ext.*	*Sha.U. 11/113*
6.	***Apamarga kshar tail***	*Badhirya*	*Ext.*	*Sha.U. 11/145*

Note: (Sha. Ma- *Sharangdhar Madhyam Khanda*, Sha. U- *Sharangdhar Uttar Khanda)*

(e) ***Bhavprakash Samhita***- According to *Bhavprakash Purvakhanda* 5/33, *Dantdhavan* with *Apamarga* increases *Dhriti-Medha.* Additionally, he stated that *Danti* or *Apamarga Kshar* should be employed in the absence of *Chitraka (Bhavprakash Purvakhanda* 6/138). In *Veertarvadi gana*, he retained *Apamarga (Bhavprakash Madhyam Khanda* 37/17). Diseases such as *Sannipata Jwara, Visuchika, Apasmara, Gulma, Ashmari, Vata Vyadhi* and others are treated with *Apamarga.* The different formulations of *Apamarga* are tabulated below.[36,37,38]

Table-05: *Apamarga* references in *Bhavprakash Samhita.*

S.No.	Formulation	Indications	Uses (Int./Ext.)	References
1.	***Sringyadi kwatha***	*Abhinyash jwara*	*Int.*	*B.P.Ma. 1/654*
2.	***Apamarga mool***	*Visuchika*	*Int.*	*B.P.Ma. 6/110*
3.	***Sidhartakadi lepa***	*Apasmara*	*Ext.*	*B.P.Ma. 23/13*
4.	***Mahanarayana tail***	*Vata Vyadhi*	*Ext.*	*B.P.Ma. 24/295*
5.	***Dvipanchmooladya tail***	*Vata Vyadhi*	*Ext.*	*B.P.Ma. 25/38*
6.	***Dhaturadya tail***	*Vatarakta*	*Ext.*	*B.P.Ma. 29/148*
7.	***Ksharashtaka***	*Gulma*	*Int.*	*B.P.Ma. 32/34*
8.	***Pasanbhedadya ghrut***	*Ashmari*	*Int.*	*B.P.Ma. 37/13*
9.	***Kushadya tail***	*Ashmari*	*Int.*	*B.P.Ma. 37/59*
10.	***Bharangyadi pralepa***	*Updamsha*	*Ext.*	*B.P.Ma. 51/33*

Note: *(B.P.Ma- Bhavprakash Madhyam Khanda)*

Apamarga* in different *Vargas

Table-06: *Apamarga* in different *Vargas.*

S.No.	*Samhita*	*Varga*	*Karma*
1.	***Charaka Samhita***[39]	*Krimighna, Vamanopaga, Sirovirecanopaga*	*Sirovirecana*
2.	***Susruta Samhita***[40]	*Varunadi gana, Viratarvadi gana, Arkadi gana, Kakolyadigana*	Preparation of *Kshara* from different drugs, *Utsadana*
3.	***Astanga Samgraha***[41]	*Sodhanadi gana, Tikta Skanda*	*Sirovirecana dravya*
4.	***Astanga Hridaya***[42]	*Tiktavarga*	*Pumsavana Karma*

Nighantu Kala- In *Ayurvedic* literature, the *Nighantu* is crucial for identifying and understanding the characteristics and applications of the medicinal plants listed in *Brihatrayi*.

Table-07: *Apamarga* references in *Nighantu Kal.*

S. No.	*Nighantu*	*Varga*	*Karma*
1.	***Saushrut Nighantu***[43]	*Arkadi gana*	--
2.	***Ashtanga Nighantu***[44]	*Arkadi gana*	--
3.	***Madanadi Nighantu***[45]	*Chaturtha gana*	*Kaphamedaanilhara, chedana, samsrana*
4.	***Dhanvantari Nighantu***[46]	*Guduchyadi varga*	*Kaph-anashana, Arsha, Kandu Udara, Rakta, Amaghano, Hrida, Grahi, Vantikruta*
5.	***Shabdachandrika***[47]	*Vrikshadi varga*	--
6.	***Nighantu Sesh***[48]	*Gulma kaand*	--
7.	***Shodhal Nighantu***[49]	*Guduchyadi varga*	--

8.	***Madhava dravyaguna***[50]	*Vividh Oshadhi varga*	*Agnikriteekshana*
9.	***Abhidhan Ratnamala***[51]	*Tikta Skandha*	--
10.	***Hrudaydeepak Nighantu***[52]	*Tripaad varga*	--
11.	***Madanpal Nighantu***[53]	*Abhayadi varga*	*Deepana, Kaphavatajita, Nihanti Dadru, Sidhama, Arsha, Kandu, Shoola, Udara, Aruchi*
12.	***Kaideva Nighantu***[54]	*Oshadhi varga*	*Deepana,Pacana,Vamanshchedi, Kaphamedoanilapaha, Nihanti Shoola, Hidhma, Arsha, Kandu, Dadru, Udara, Apachi*
13.	***Bhavprakash Nighantu***[55]	*Guduchyadi varga*	*Deepana, Pacana, Rocana, Chardi, Kaphamedoanilpaha, Nihanti Hrida, Dadru, Adhamana, Kandu, Shoola, Udara, Apachi.*
14.	***Guna ratnamala***[56]	*Guduchyadi varga*	--
15.	***Raj Nighantu***[57]	*Shatahwaadi varga*	*Kaphanashana, , Arsha, Kandu Udara, Amaghano, Rakta, Hrida,Grahi Vantikruta*
16.	***Rajvallabha Nighantu***[58]	*Oshadha ashrayaparichhed*	*Kledana, Samsrana*
17.	***Shaligram Nighantu***[59]	*Guduchyadi varga*	--
18.	***Priya nighantu***[60]	*Shatpuspadi varga*	--
19.	***Nighantu Adarsha***[61]	*Apamargadi varga*	
20.	***Saraswati Nighantu***[62]	*Ullap varga*	--
21.	***Laghu Nighantu***[63]	--	*Krimi, Shirshavishodhanam, Vamaka, Raktasamgrahi, Raktaatisaranashanam*
22.	***Prayayaratnamala***[64]	--	--

3. Adhunik kala

Along with their *Raspanchaka* description, several other literary works, such as *"Dravyagun Vigyan,"* "*Vanaushdhinirdeshika,*" and *"Dravyagun hastamalak*," have also discussed their anti-toxic and anti-helminthic properties.

Scientific classification[65]

Table-08: ***Apamarga- Scientific classification.***

Kingdom	**Planate**
Subkingdom	Tracheobinota
Unranked	Angiosperms
Super Division	Spermatophyta
Order	Caryophyllales
Division	Mangoliophyta
Class	Mangoliophsida
Subclass	Caryophyllidae
Order	Caryophyllales
Family	*Amaranthaceae*
Genus	*Achyranthes*
Species	*Aspera*
Binomial name	*Achyranthus aspera*
Family	*Amaranthace*

Synonyms

Mayuraka, Kinihi, Shikhari, Adhah Shalya, Kharamanjari, Kubja, Vasheera, Durabhi Graha, Durgraha, Kharamanjari, Markati, Markata Pippali, Kapi Pippali, Parak Pushpi, Pratyak Shreni.[66]

Table-09: *Apamarga*-Vernacular names.

Arabic	*Atkumah*
Bengali	*Apang*
Burmese	*Kune-la-mon*
English	Rough Chaff /Prickly Chaff – flower, devil's horsewhip
Gujarati	*Aghedo*
Hindi	*Latjira,Aghara, Apamarga, Chirchira, Chirchit*
Kannada	*Uttatane*
Konkan	*Uttatene*
Malayalam	*Katalati/Kadaladi*
Marathi	*Aghadha/Pandhara– agada*
Persian	*Khare– Vazhun*
Punjabi	*Kutri*
Tamil	*Nayurivi/Shiru-kadaladi*
Telugu	*Uttareni/Antisha/Apamargamu*
Sanskrit	*Apamarga/Aghata/Kharamanjari*
Sinhala	*Karala heba*
Urdu	*Chirchita*

Botanical description[67]

Aspera Achyranthes Linn. is an annual herb that is stiff and upright.

Habit: An upright, wild, perennial herb.

Stem: upright, branching, cylindrical, solid, angular, hairy, longitudinally striated, green with noticeable internodes and nodes, but woody underneath.

Leaves: Ramal and cauline, simple, exstipulate, opposite decussate, petiolate, ovate or obovate, entire, acute or acuminate, hairy all over, unicostate reticulate.

Inflorescence: A spike on a long peduncle bearing reflexed blooms.

Flowers: Bracteate, bracteolate, bracteoles two, shorter than perianth, dry, membranous and persistent, sessile, complete, hermaphrodite, actinomorphic, pentamerous, hypogynous, small, spinescent, green. Bracts, ovate, persistent, awned. Perianth made up of 5 tepals, polyphyllous, imbricate or quincuncial, green, ovate to oblong, persistent.

Ten stamens make comprise an androecium, five of which are fertile and five of which are scale-like, fimbriated, sterile staminodes that alternate with one another. Fertile stamens are dorsifixed or versatile and have filaments that are partially joined at the base. Bicarpellary, syncarpous, superior, unilocular, ovule one, basal placentation, style single and filiform, and stigma capitate are the characteristics of the gynoecium.

Fruits: Utricle oblong

Seeds: Endospermic, oblong, black, 2 mm long, with a curled embryo.

Diagram-01: Showing parts of *Apamarga.*

Origin and Distribution[68]

The tropics and subtropics of Europe, Africa, Asia, Australia, and the Americas are home to Achyranthes aspera. It is believed that the Old Word is where it first appeared. It can be found in arid, open areas up to 2000–3000 meters above sea level (Nepal or Tanzania). It is frequently found in sand dunes, thickets, open grasslands, forest trails, seasonal wetlands, dried-up watercourses, and secondary regrowth along the borders of forests. It thrives in sandy soils, particularly where trees and bushes provide shade. In Mexico, where it thrives in disturbed regions, it is regarded as a weed. In certain parts of Tanzania, it has been described as invasive.

Varieties

In *Nighantu* (Ayurvedic Lexicons), in general, *Apamarga* is defined in two types. [67]

1. *Shweta* (White variety)
2. *Rakta* (Red variety)

But in *Kaideva Nighantu*, 3 varieties of *Apamarga* arementioned.[69]

1. *Apamarga* (White variety)
2. *Raktapamarga* (Red variety)
3. *Toyapamarga* (Blue variety)

Raaj Nighantu has also mentioned 3 varieties that are abit different from *Kaidev Nighantu* which is[70]

1. *Apamarga*
2. *Raktapamarga*
3. *Kshudrapamarga*

Part used[71]**-** *Tandula, Patra, Mula,Panchanga.*

Phytochemical- Constituents

The entire *Achyranthes aspera* plant, including the seeds, contains alkaline substances, particularly potash. The chemical components of different plant parts have been identified and isolated.

Leaves: the volatile oil from Achyranthes aspera leaves contains hydroquinone (57.7%), with other constituents including p-benzoquinone, spathulenol, nerol, α-ionone, asarone, and eugenol. The leaves also contain alkaloids, flavonoids, saponins, tannins, and phenolic compounds.[72]

Stem: The plant's shoots are used to isolate the following compounds: tetracontanol-2 (C40H82O), 4-methoxyheptatriacont-1-en-10-ol (C33H76O), 17-pentatriacontanol, penta-triaontane, 6-pentatriacontanone, Hexatriacontane, Tritriacontane, aliphatic alcohol, 37-dihydroxyhenpentacontan-4-one, and E-sitosterol and spinasterol. Along with 36, 47-dihydroxyhenpentacontan-4-one 21, triacontanol was also identified. After being separated from the shoots, two long-chain chemicals were identified as 16-hydroxy-26-methyleheptacosan-2-one 28 and 27-cyclohexylheptacosan-7-ol. Three bisdesmosidic saponins (I–III), 20-hydroxyecdysone, and quercetin-3-O-β-D galactoside were identified in the methanol extract by Kunert et al. in 200029.[73]

Whole Plant: In alloxan-induced diabetic rats, Mandar et al. (2011)19 demonstrated the effects of a whole plant ethanol extract on a variety of haematological (such as RBC, WBC count, Hb%, clotting time, and O2 carrying capacity) and biochemical (such as blood sugar level, lipid profile) parameters. They came to the conclusion that Achyranthes aspera possesses haematinic, hypoglycemic, and antihyperlipidemic activity that can be used in conjunction with other

treatments for diabetic complications. Whole plant ethyl acetate extracts (dry leaf, flower, and seed extract) shown antiparasitic action against sheep internal parasite Paramphistomum cervi and cow tick larvae Rhipicephalus microplus.[74]

Seed: Extracts of Achyranthes aspera seeds in ethanol and chloroform exhibit modest to moderate antibiotic action against P. aeruginosa 88, E. coli, and B. subtilis. Achyranthine, a water-soluble alkaloid that was extracted from Achyranthes aspera, dilated blood vessels, lowered heart rate and blood pressure, and had antipyretic and anti-inflammatory properties. The extract from A. aspera and A. bidentata contains oleanolic acid, which possesses anti-stress and anti-apoptotic properties in addition to promoting neuronal growth and shielding hippocampus neurones from damage.[75]

While essential fatty acids (EFAs) are principally responsible for the immune-stimulating action, ecdysterone is the growth-stimulating component of Achyranthes aspera seeds. When EFAs (oleic and linolenic acids) are administered in conjunction with other seed components, the immune system is more stimulated.[76]

Ayurvedic* Properties of *Apamarga [77-78]

Table-10: *Apamarga- Ayurvedic* Properties.

Rasa	*Katu, Tikta*
Guna	*Laghu, Ruksa, Tikshna*
Virya	*Usna*
Vipaka	*Katu*
Karma	Kapha and Vata pacified. Lekhan, Visaghna, Tvak-Dosahara, Vrana-Sodhana, Dipana-Pachana, Medohar, Chedana, Vamaka, Sirovirecana, Sodhahara, Vedana sthapana, • Although the fruits of Apamarga are Vipaka in nature and Madhura in rasa, they are vistambhi because they induce constipation.

Therapeutic dose[79]

- Svarasa: 10–20 mL.
- Kwatha: 50–100 mL.
- Mula Churna: two to four gm.
- Beeja Churna- 500–700 gm.
- Kshara: between 0.5 and 2 gm.

THERAPEUTIC INDICATIONS[77-78]

Kandu, Kushtha, Visha, Vrana, Karna-Roga, Netra-Roga, Aruchi, Chardii, Udararoga, Krmi, Hridroga, Pandu, Gandamala, Amavata, Kasa, Shwasa, Mutraghata, Visuchika, Sidhma, Nidranasa, Ashmari, Arsha, Kaphaja Timira, Praklinnavartma, Paripotaka, Pleehodara, Apachi, Sharkara, Utpataka.

Important formulations with indications[26,29,31,34,36]

Table-11: *Apamarga- Ayurvedic* formulations with indications.

S.no.	Formulations	Indications	References
1.	*Apamargaksara taila*	*Karnanada, Badhirya*	*Sha. U. 11/145*
2.	*Apamargadi taila*	*Nasya* in *Krimiroga, Sidhma*	*Chakradatta Shirog adhikara-34, A.S.Chi.21/64*
3.	*Agasthya Haritaki Rasayana*	Rajayakshma, Grahani, Shopha, Agimandya, Svarabheda, Kasa, Pandu, Svasa, Shiroroga, Hrudroga, Hikka, Vishamajvara; Rasayana, Jvara, Kasa and Hrdroga and Pratisyaya	*C.Chi.18/57, Su. U. 52/43, A.S.Chi. 5/83, Sha. Ma. 8/31*
4.	*Kalyanaka lavana*	*Vataroga, Gulma Pliha, weak digestion, Ajirna, Arsha, Aruci, Kasa, Krimi.*	*Ch. Chi. 18/57*
5.	*Apamarga Varti*	*Asragdara*	*B.R. 66/35-41*
6.	*Vrana Samshodaka taila*	*Vrana shodhana* (For cleansing wounds)	*S.Su. 36/19*
7.	*Apamarga kshara*	For *Pratisaraniya kshara* (caustics for external use) in *Plihodar* and various other diseases.	*Su. Chi. 14/13*
8.	*Gorochanadi Gulika*	*Jwara, Kasa, Svasanaka Jwara, Shwasa, Kantharoga, Sannipata Jwara, Smṛtinasa, Sravana Lopa, Drsti Lopa, Sanjnanasa*	AFI Vol 1 Part B 12:9
9.	*Jyotishmati tail*	*Abhyanga* in *Shwitra*	AFI Vol 11 Part B 8:18
10.	*Abhaya Lavana*	*Yakrit Pliha roga, Ashmari*	*B.R. Yakrit pleeharoga 34-33*
11.	*Guda pippali*	*Yakrit Pliha Roga, Jalodara*	*B.R. Yakrit pleeharoga 44-48*
12.	*Kushthaghna Yoga*	*Kushtha*	*Ch. Chi. 7/124*
13.	*Jivantyadi churna*	*Rajyakshma*	*Ch. Chi. 8/175*
14.	*Apamargadi varti*	*Anjana Unmada*	*Ch. Chi. 9/66*
15.	*Mahapanchgavya ghrut*	*Apasmara*	*Ch. Chi. 10/18*
16.	*Triphaladi tail*	*Nasya Apasmara*	*Ch. Chi. 10/44*
17.	*Agnimanthadi tail*	*Udar roga*	*Ch. Chi. 13/171*
18.	*Muktadya churna*	*Hikka-Swaas*	*Ch. Chi. 17/126*
19.	*Apamarga moola with tandulodak*	*Arsha*	*Su. Chi. 6/13*
20.	*Tiladi Kshar*	*Ashmari*	*Su. Chi. 7/22*
21.	*Apamarga beeja*	*Kaphaja Nadi vrana*	*Su. Chi. 17/25*
22.	*Suvarchikadi tail*	*Karnapali vardhana*	*Su. Chi. 25/26*
23.	*Amrit sarpi*	*Sarpa visha*	*Su. Ka. 6/12*
24.	*Panchgavya ghrut*	*Atisara*	*Su. U. 61/34*
25.	*Parijatadi kwatha*	*Agnimandya*	*A.S.Chi.17/34*
26.	*Varshabhuadi kshir*	*Aamdosha*	*A.S.Chi.19/4*
27.	*Lakshadi churna*	*Kushtha*	*A.S.Chi.21/35*
28.	*Sarjarasadi tail*	*Paalipaka*	*A.S.U. 22/51*
29.	*Saraladi tail*	*Krimij Siroroga*	*A.S.U. 28/22*
30.	*Jivantyadi udvartana*	*Rajyakshma.*	*A.S.Chi. 7/107*
31.	*Pashanbhedadi ghrut*	*Ashmari*	*A.S.Chi.13/11, B.P.Ma. 37/13*
32.	*Muktadi leha*	*Swaas- Hikka*	*A.S.Chi. 6/45*
33.	*Virtarvadi gana kwatha*	*Ashmari*	*Sha. Ma. 2/105*
34.	*Apamarga kalka*	*Raktarsha*	*Sha.Ma. 5/19*
35.	*Grihadhoom tail*	*Nasarsha*	*Sha. Ma. 9/184*
36.	*Marichadi lepa*	*Linga- Stana Vriddhi*	*Sha.U. 11/113*
37.	*Sringyadi kwatha*	*Abhinyasa sannipataja jwara*	*B.P.Ma. 1/654*
38.	*Bharangyadi pralepa*	*Updamsha*	*B.P.Ma. 51/33*
39.	*Kushadya tail*	*Ashmari*	*B.P.Ma. 37/59*
40.	*Ksharashtaka*	*Gulma*	*B.P.Ma. 32/34*
41.	*Dhaturadya tail*	*Vatarakta*	*B.P.Ma. 29/148*
42.	*Dvipanchmooladya tail*	*Vata Vyadhi*	*B.P.Ma. 25/38*
43.	*Mahanarayana tail*	*Vata Vyadhi*	*B.P.Ma. 24/295*
44.	*Apamarga mool*	*Visuchika*	*B.P.Ma. 6/110*
45.	*Sidhartakadi lepa*	*Apasmara*	*B.P.Ma. 23/13*

Contraindications and side effects of*Apamarga*[79]

Male patients undergoing infertility treatment must stop taking *Apamarga* for an extended period of time; pregnant or nursing women and children under the age of 12 should only use *Apamarga* under a doctor's supervision; and taking more *Apamarga* than is recommended may cause nausea and vomiting.

Article Review/ Pharmacological Activities

a) Antimicrobial-Its antibacterial and antifungal properties have been tested by a variety of plant activities. It has been stated that this plant contains a potent antibacterial agent. The plant's seeds, leaf extract, alcoholic leaf and stem extract, ethyl acetate extract of the stem, and an aqueous floral extract were all found to have antibacterial properties. According to reports, the essential oil that was isolated from the shoots had antifungal efficacy against *Aspergillus cameus*. Numerous dried leaf extracts made with solvents such as petroleum ether, chloroform, and methanol have been shown to exhibit antifungal and antibacterial properties. By using the agar-solid diffusion method, the extracts were tested for antibacterial activity against three gram-negative bacteria (*E. coli, P. aeruginosa* and *K. pneumoniae*), two gram-positive bacteria (*S. aureus* and *S. epidermidis*), and antifungal activity against seventeen fungal strains. [80-81]

It has been discovered that this plant possesses antibacterial properties that help prevent nosocomial infections. In the healthcare textile industry, it is also utilized as a herbal antibacterial for cotton fabric. By using the agar well diffusion method, some research have also found that diethyl ether extract of leaves exhibits stronger antibacterial activity against *E. coli, P. aeruginosa* and *E. cloacae* than ethyl acetate and acetone extract. This plant's essential oil, tannins, saponin, flavonoids and alkaloids are what give it its antibacterial and antifungal properties.[82]

b) Lavicidal- An essential component of the root, ecdysterone, exhibits strong hormone activity related to insect moulting. Stronger larvicidal efficacy against *Boophilis microplus* was seen in tick larvae treated with an ethanolic crude extract of the plant. Larvicidal saponins derived from leaf extracts are tested against southern house and yellow fever mosquitoes. It has been discovered that the leaf's ethyl acetate extract is effective against *Aedes subpictus* mosquito larvae. It was mentioned that the plant had the ability to suppress mosquito larvae. Essential oils extracted from leaf and stem extract by steam distillation demonstrated active larvicidal properties against southern house mosquitoes and yellow fever mosquitoes. According to reports, the plant's leaf extracts have anti-yellow-fever mosquito properties.[83-84]

c) Antifertility- Numerous studies have been conducted on the plant and the results indicate that it has a stronger antifertility effect. In mice, extracts of different plant components had an abortifacient effect, with benzene extract exhibiting the highest efficacy. It has been reported that the plant's aerial parts can keep female rats from getting pregnant. The plant's leaf, root, and seed extracts regulate postpartum haemorrhage, placental retention, and fertility. In rats, benzene extract from stem bark was discovered to have abortifacient properties. Studies using the root's ethanolic extract in vitro and in vivo revealed spermicidal action.[85-86]

d) Anti-cancer- According to reports, the herb contains anticancer and chemo-preventive properties. It was discovered that the plant's nonalkaloidal fractions contained a useful antitumor promoter. It was discovered that leaves extracted in methanol had inhibitory effect against human carcinoma cells, indicating that they have anti-proliferative and anti-cancer qualities. Compared to cells of prostate, lung, and breast origin, the methanolic extract exhibits a higher sensitivity to pancreatic cancer cell lines. The mechanism of this activity involves the inhibition of MMPs and

angiogenic factors, as well as the suppression of the transcription of metalloproteases (MMP-1 and 2). [87-88]

The antitumor effectiveness of oil injections administered intraperitoneally to Swiss albino mice was evaluated. Free radicals found in mineral oils have the ability to attach to DNA and interact with purine and pyrimidine groups in DNA, transforming healthy cells into malignant ones. A. aspera's antioxidant activity prevents carcinogens from damaging DNA, which changes how cells function. The plant extract was used to select secondary metabolites with harmful effects using the Artemia salina lethality (BSL) bioassay. Rats' chemically induced hepatocarcinogenesis was found to be inhibited by extracts of several plant components. Strong anticancer activity is demonstrated by the in vitro analysis of separated terpenoid components from petroleum ether extract.[89-90]

e) Immunostimulant- Compared to the plant's stem and leaves, seed and root extract showed a higher level of immunostimulatory activity. In the fish *Labeo rohita*, root extract increases the generation of antibodies. In *Labeo rohita*, the aqueous root extract of A. aspera exhibits anti-protease action. It has been observed that the plant's seed enhances *Cyprinus carpio's* immunological response. In *Catla catla*, the herb acted as an immune-stimulant and an enhancer of antigen clearance.[91-92]

It has been observed that immunostimulatory chemicals in seeds increase the sustainability and immunity of *Labeo rohita* infected with Aeromonas hydrophila. It has been found that the hydroalcoholic extract increases phagocytic activity, hence promoting T cell-mediated immunity.[93]

f) Hypoglycaemic- When given orally to both normal and alloxan-induced diabetic rabbits, aqueous and methanolic extracts of the whole plant material exhibit hypoglycemic action. According to the results, the plant might be able to help beta-cells by giving them essential elements including calcium, zinc, magnesium, manganese and copper.[94]

Rats with alloxan-induced diabetes exhibit dose-dependent antidiabetic effects when given an ethanolic extract of the entire plant material orally. In rats with diabetes, the extract aims to keep plasma insulin and blood glucose levels close to normal. This activity may be caused by stimulating Ca^{++} entry and shutting the K^{+} ATP channel, which would increase insulin secretion.[95]

In rats with alloxan-induced diabetes, aqueous extract of the plant's leaves at higher doses (500 mg/kg) dramatically lowers blood glucose and glycosylated haemoglobin while raising serum insulin and glycogen levels. In comparison to the common medication Metformin, it also increases the activity of the enzymes glucokinase and glucose-6-phosphate dehydrogenase in a dose-dependent manner. In streptozotocin-induced diabetic rats, the chloroform fraction of the ethanolic leaf extract decreases blood glucose levels 48 hours later. According to purification studies, it includes strong compounds that may have antidiabetic effects, including sitosterol, triacontane, ursolic acid and oleonolic acid.[96]

g) Hypolipidemic Activity- Alcoholic extract of A. aspera reduces serum cholesterol (TC), phospholipid (PL), triglycerides (TG), and total lipids (TL) in rats with triton-induced hyperlipidaemia. Rats fed sesame oil were used to test the aqueous extract of the entire plant for its hypolipidemic effects. Lipid peroxidation is considerably decreased towards the normal level when A. aspera extracts are administered. In rats with cholesterol-induced hyperlipidaemia, oral treatment of an ethanolic and aqueous extract of powdered leaves dramatically reduces serum cholesterol and serum triglyceride levels in a dose-dependent manner as compared to conventional atorvastatin. A. aspera's hypolipidemic action is caused by a mechanism that reduces external cholesterol absorption and speeds up bile acid output through

endogenous cholesterol conversion.[97-98]

h) Anti-inflammatory- In a model of hind paw oedema caused by carrageenan, the rat paw oedema is most inhibited by an alcoholic extract of *A. aspera*. In the cotton pellet granuloma model, it lowers the granuloma weight. Because flavonoids inhibit phospholipase-A and cyclooxygenase, they validate the anti-inflammatory properties of A. aspera. An active component of A. aspera stem quercetin inhibits fibroblasts' proliferative phase, which lowers the weight of granulomas. Rats given an alcoholic extract of *A. asperain* roots orally demonstrated encouraging anti-inflammatory efficacy against both acute and chronic inflammation.[99]

i) Antioxidant Activity- The antioxidant activity of the plant has been tested through a variety of activities. The antioxidant action of A. aspera is confirmed by the high concentration of alkaloids and flavonoids found in its leaves, which reduce lipid peroxidation. The aqueous extract of *A. aspera* leaves, as shown by the 1, 1-diphenyl-2-picrylhydrazyl (DPPH) scavenging assay and superoxide scavenging activity, more effectively inhibits the production of free radicals in vitro than the ethanolic extract.[100]

When examined using the DPPH scavenging assay, the methanolic extract of *A. aspera's* leaves and roots demonstrated a higher level of antioxidant activity. When tested for antioxidant activity using the DPPH, ABTS, and FRAP assays, the petroleum ether extract of the aerial portions of A. aspera var. Porphyristachya exhibits greater antioxidant activity than the chloroform and ethyl acetate extracts. According to in-vitro research, *A. aspera* var. *Rubro fusca* has the ability to scavenge free radicals. According to certain research, A. aspera has the ability to protect DNA and act as an antioxidant. By using the phosphomolybdenum assay, ethanolic leaf extract of *A. aspera* leaf powder (IC50 = 7.49 µg/ml) exhibits good antioxidant activity in comparison to conventional ascorbic acid (IC50 = 11.73 µg/ml).[101]

j) Anti-Asthmatic- According to certain research, the polyherbal combination of *Tylophora indica*, *Albizzia lebbeck, Glycyrrhiza glabra* and *A. aspera* exhibits strong anti-anaphylactic and broncho-constriction protection. It results from eosinophilia inhibition and mast cell stabilization. Toluene diisocyanate (TDI)-induced occupational asthma in Wistar rats is prevented by the plant's ethanolic extract, confirming its bronchoprotective properties.[102]

k) Diuretics- According to reports, A. aspera has an antagonistic effect on uterine contractions brought on by oxytocin. Saponins are what give the plant its diuretic properties. One of A. aspera's main chemical constituents, achyranthine, is included in the commercially available polyherbal formulation Cystone. In glycollic acid-induced urolithiasis, Cystone prevents the oxalate-synthesising liver enzyme glycolate oxidase from doing its job.[103]

l) Anti-arthritic- A. aspera's chyranthine has been shown to have anti-arthritic properties. Freund's full adjuvant-induced arthritis has demonstrated the antiarthritic properties of the plant's ethanolic extract. In rats, the aqueous extract of Aspera was found to protect against joint inflammation and arthritis brought on by formaldehyde.[104]

m) Activity for Wound Healing - In rats with burn wounds, topical administration of a 5.0% (w/w) ointment of methanolic leaf extract demonstrated wound healing efficacy. The rate of wound contraction, the increase in antioxidant enzymes, and biochemical assays employing the Burn wound model, Diabetic wound model, and Immunocompromised model are used to measure the activity of wound healing. Gelatin zymography shows the protein's ability to repair wounds.[105]

n) Cardiac Activity- According to certain research, the isolated saponin A from A. aspera seeds increases the isolated and undamaged hypodynamic heart's contraction force. The cardiovascular toxicity of leaf decoction has been documented. In dogs under anaesthesia, the water-soluble alkaloid achyranthine reduces blood pressure, slows the heartbeat, and causes an increase in the rate and amplitude of breathing. It was shown that the isolated saponin affected the phosphorylase activity of the rat heart. In certain regions of Western Africa, the plant has been shown to have cardiovascular system activity.[106]

o) Analgesic and Antipyretic Activity- Using various techniques, the methanolic extract of the entire plant and the hydroalcoholic extract of the leaves and roots demonstrated greater analgesic effectiveness in a dose-dependent manner. At higher dosages, the leaf's methanolic extract had a notable analgesic effect in acetic acid-induced writhing syndrome. Rats who get higher dosages of oral medication writhe less than those in the control group. Higher doses of the extract lengthen reaction times in the hot plate and tail flick methods when compared to the control group.[107-108]

DISCUSSION

Apamarga is concluded to have *Samhita* based indications *Kandu, Kushtha, Visha, Vran, Karna-Roga, Netra-Roga, Aruchi, Chardii, Udararoga, Krmi, Hridroga, Pandu, Gandamala, Amavata, Kasa, Shwasa, Mutraghata, Visuchika, Sidhma, Nidranasa, Ashmari, Arsha, Kaphaja Timira, Praklinnavartma, Paripotaka, Pleehodara, Apachi, Sharkara* and *Utpataka. Apamarga* also possesses Antimicrobial, Lavicidal, Antifertility, Anti-cancer, Immunostimulant, Hypoglycaemic, Hypolipidemic Activity, Anti-inflammatory, Antioxidant Activity, Anti-Asthmatic, Diuretics, Anti-arthritic, Activity for Wound Healing, Cardiac Activity, Analgesic and Antipyretic Activity.

Table No. 12: Comparison Between Ayurvedic Indications and Article Concluded Effects.

AYURVERDIC INDICATION	ARTICLE CONCLUDED EFFECTS
Kandu, Arsha, Visha, Vran	Antimicrobial, Lavicidal, Activity for Wound Healing, Anti-inflammatory, Immunostimulant
Kushtha, Sidhma	Antimicrobial, Lavicidal, Activity for Wound Healing, Anti-inflammatory, Antioxidant Activity, Immunostimulant
Karna-Roga	Antimicrobial, Lavicidal, Activity for Wound Healing, Anti-inflammatory, Anti-cancer, Analgesic and Antipyretic Activity.
Netra-Roga, Kaphaja Timira, Praklinnavartma, Paripotaka, Utpataka	Antimicrobial, Lavicidal, Activity for Wound Healing, Anti-inflammatory, Anti-cancer
Aruchi, Udararoga, Pleehodara, Apachi, Visuchika, Chardii	Antimicrobial, Lavicidal, Activity for Wound Healing, Anti-inflammatory, Analgesic and Antipyretic Activity.
Krmi, Pandu	Antimicrobial, Lavicidal, Activity for Wound Healing
Hridroga, Sharkara	Cardiac Activity, Hypoglycaemic, Hypolipidemic Activity
Gandamala	Anti-inflammatory, Anti-cancer, Analgesic and Antipyretic Activity.
Amavata	Anti-arthritic, Anti-inflammatory, Analgesic and Antipyretic Activity.
Kasa, Shwasa	Anti-Asthmatic, Analgesic and Antipyretic Activity.
Mutraghata, Ashmari	Diuretics, Analgesic and Antipyretic Activity.
Nidranasa	-
-	Antifertility

CONCLUSION

Apamarga is concluded to have more than 25 *Samhita* based indications and nearly 16 Article concluded effects. Among them *Nidranasa* is *Samhita* based indication on which there is none availability of appropriate study, which may act as area of further research.

CLINICAL SIGNIFICANCE

Areas of further research are identified in drug *Apamarga* by comparing *Samhita* based indications with Article concluded effects.

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