ABSTRACT

Background: Our ancient seers recognised the value of Aahara Aushadhi (medications in the form of diet) and adopted different cooking methods with addition of condiments to make our daily meal, our daily potion of health. Jeeraka is one of the herbs that has been well amalgamated in the daily food in Indian subcontinent. Though it is used regularly as a spice, its therapeutic benefits are not known to all. Besides, the same Jeeraka can be modified into different dosage forms and treat a number of diseases like Grahani (Irritable Bowel Syndrome), Agnimandya (loss of appetite), Jwara (fever) etc. Out of the countless formulations of Jeeraka, this research aims to see its potentials as mentioned in Bhaishajya Ratnavali.

Materials and Methods: The present review has compiled the formulations containing any of the Jeeraka Traya i.e. Krishna Jeeraka, Shveta Jeeraka and Kalaunji from Bhaishajya Ratnavali. Recent researches regarding the pharmaceutical benefits also have been screened.

Results and Discussion: Total 242 formulations contained Jeeraka. Out of these, maximum formulations are used in the treatment of Grahani.

Conclusion: The present work showed that Jeeraka had been used in different dosage forms in 44 diseases.

Key Words: Jeeraka, Traya, Kalaunji, Grahani

INTRODUCTION

Ayurveda deals with a wide array of dietary, daily regimen for the acquisition of optimum health of an individual. It rekindles metabolism (Agni), rejuvenates the cells (Rasayana), boosts memory (Medha), balances the homeostasis of physical (Sharirika) and mental (Mansika) Dosha and overall strengthens the foundation of health. In the context of Ayurveda, any substance can be called as “Bheshaja” (drug) as it can mitigate the symptoms, chronicity or even complications of the disease. It is also called as “Aushadham” (medicine) meaning a substance having capability to alleviate pain. Kalpana means Yojana (planning) i.e. the skill of making use of even a single Dravya (substance) or different Dravya with their permutation and combinations to bring a final optimized product. Some of the drugs are even used as spices in food and incorporated into meals i.e. Aaha Aushadhi that help to replenish the body with important nutrients. The spices that are used in food, generally add flavour and taste to the food and contain high amount of trace elements. So, they prove their efficacy even when used in small quantities. The daily meals taken in the Indian subcontinent have been amalgamated with the condiments in such a manner that they provide nutrition with each morsel.

Among various spices used, Jeeraka is a common one used in routine food recipes since Vedic era. Jeeraka is an aromatic herb used to mostly improve digestion. These days, its use...
has been limited in the use of digestive system only. It can be used in various proportions and in various dosage forms to alleviate various diseases. This work scans the various formulations of any form of Jeeraka mentioned in Bhaisajya Ratnavali. It also provides the recent researches regarding the phytoconstituents present in it. A slight uncertainty remains about the specificity of Jeeraka as other condiments also have similar synonyms. This work also addresses the concern and provides a precise information regarding the synonyms, types and contemporary taxonomy of each component of the Jeeraka Traya.

MATERIALS AND METHODS

Bhaishajya Ratnavali is a classic treatise of Acharya Govindadasa Sen. The treatise was screened for the formulations containing any of the “Jeeraka Traya.” This is the first research that addresses all the three Jeeraka varieties. The formulations were further classified according to the type of Jeeraka and the varieties of Jeeraka contained in a single formulation, in a paired form, in Bhrisata (Fried) form or containing all three of Jeeraka were screened, classified and tabulated. The researches related to the pharmacologic actions were also screened through search engines like googlescholar, pubmed, google etc. and other allied databases covering fields of pharmacology and biomedicine to further support the therapeutic attributes of Jeeraka.

RESULTS AND DISCUSSION

Classification: Jeeraka Dwaya include Jeeraka and Krishna Jeeraka. Jeeraka Traya, the most frequently used forms of Jeeraka include Jeeraka (Cuminum cyminum Linn.), Krishna Jeeraka (Carum carvi Linn.) and Upakunchika (Nigella sativa Linn.).1 Krishna Jeeraka is not described among the Varga or Gana of Brihatrayi.2 Some Nighantu (Ayurvedic texts) have mentioned six varieties of Jeeraka- Shvet, Pita, Krishna, Sukshma, Shhula and Vanaja Jeeraka. Ayurvedic text Charaka Samhita has mentioned 46 formulations, Sushruta Samhita 9, Ashtanga Hridaya 33 and Sharangdharsha Samhita 6 formulations of Kalajaji. Likewise, Charaka Samhita has mentioned 12 formulations, Sushruta Samhita 1, Ashtanga Hridaya 7 and Sharangdharsha Samhita 9 formulations of Krishna Jeeraka. 42 synonyms of Kalajaji and 29 of Krishna Jeeraka are found mentioned in Ayurvedic classics i.e. Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya, Bhavaprakasha Nighantu, Siddha Bhaisajya Manimala, Vaidyatattvaratnakara, Shankara Nighantu, Nighantu Ratnakara, Nighantu Kalpadruma, Nighantu Shiromani and Abhinava Nighantu. 3

Controversy: There have been a few controversies as to the nomenclature of the three species. The vernacular names and synonyms have been used in interchangeable forms by different seers and schools of thoughts. Acharya Chakrapani quoted Kunchika as Sthula Jeerakam. Bhavamishra used Kalajaji, Brihat Jeeraka, Karvi and Prithveeka as the synonyms for Upakunchika. Irrespective of these controversies, N. sativa is used traditionally as Kalounji or Upakunchika.4 Vaidya PV Sharma, Vaidya Bapalal and Prof K Nishtheshwar considered C. carvi as Karvi. Vaidya PV Sharma considered C. bulbocastanum as Krishna Jeeraka. Vaidya Thakur quoted C. cyminum and C. carvi as Shveta and Krishna varieties of Jeeraka, Prithveeka as C. bulbocastanum and N. sativa as Upakunchika. This school appears to be more appropriate and relevant.5 The true caraway for pharmaceutical purposes is represented by Carum carvi, however, the fruits of Carum bulbocastanum, C. gracile, Cuminum cyminum, Bunium cylinricum and Bupleurum lanceolatum are offered in commerce as caraway or Jeera.6

Ajajee Kshupayamana, Kanajeeraka, Dirghaka, Jeeraka, Medhya, Pitaka are the synonyms of Shveta Jeeraka. (Latin name – Cuminum cyminum Linn.). Uparapatha, Varnakali, Sugandha, Kalajeeraka, Jarana, Hridhya, Udgarashodhana are the synonyms of Krishna Jeeraka. (Latin name – Carum carvi Linn., Family- Apiaceae). Kalika, Karvi, Mangrela, Prithvee, Prithvika, Suvshim Kunchi, Varakrishna, Upakalika, Vasphika are the synonyms of Kalajaji. (Latin name – Nigella sativa Linn., Family- Ranunculaceae).7

Asita Jeeraka, Black Caraway, Krishna Jeeraka, consist of dried ripe fruits of Carum carvi Linn. Sthula Jeeraka, Upakunchi, Susavi, small fennel consists of seeds of Nigella sativa Linn.

Ajaji, Safed Jeera, Shveta Jeeraka consists of ripe fruits of Cuminum cyminum, Linn.

The Ayurvedic Pharmacopoeia of India has mentioned that in Bengali, Upakunchi/Nigella seeds are called Mota Kalajjeera and Kalajeera. Likewise, black caraway seeds are called Kala Jira as well. The use of the same name for two different species may also be present in different other regions and the species may have been used interchangeably.

All three types of Jeeraka are Ruksha, Katu, Ushna Veerya, Agnidipaka, Laghu in Paripaka, Sangrayee Pittakaraka, Hitakara for Medha, Garbhasayashodhaka, Jwaranashaka, Pachaka, Vridya, Balakaraka, Ruchihana, Kaphanashaka, Chakhushyam, alleviate Vayu, Adhmana, Gula, Vamana and Atisaraas.8

Bhaishajya Ratnavali contains compilation and systematic categorization of the different formulations according to the methods of preparation. Hence it can be called as the first Ayurvedic formulary.9 This compendium was hence chosen to compile the broad spectrum of therapeutic potentials of Jeeraka. Jeeraka is an aromatic spice that has a very potent action on enhancing metabolism. The impact of Jeeraka and Agni (digestive fire) in terms of promoting metabolism and aiding excretion is well recognized.10

Total 242 formulations from text contained Jeeraka as an ingredient. 3 formulations have all the three Jeeraka Traya. 144 formulations have Jeeraka, 17 formulations have Krishna Jeeraka and 5 formulations have Karvi in them. 62 formulations have Jeeraka Dwaya i.e. Krishna and Safeda Jeeraka, 7 formulations
have Karvi and Shveta Jeeraka. Among all the 242 formulations, only 4 formulations included Bhrishta Jeeraka (fried Jeeraka).

Maximum number of formulations i.e. 33 formulations with Jeeraka are mentioned for Grahani. 17 of the formulations with Jeeraka are mentioned for Jwara and 14 for Agnimandya and Shoola. It has been listed as Pathya for diseases like Grahani and Agnimandya.

Jeeraka (Cuminum cyminum Linn.): Cumin (Cuminum cyminum L.) seeds are a widely consumed aromatic food spice with reported anticancer and antibacterial effects based on in vitro and in vivo studies.1,11,12,13,14 It contains 2.5-4% volatile oil, 10% fixed oil and protein. Volatile oil mainly consists of 30-50% cumin aldehyde, small quantity of alpha pinene, beta pinene, phellandrene, cuminic alcohol, hydrated cuminaldehyde and hydrocumin.15 Cumin is recognized as a wound healing,16 phytoestrogen-rich plant containing estrogenic components, such as beta-sitosterol, stigmasterol and the flavonoids luteolin and apigenin.17 The cuminaldehyde presents antiociceptive, antineuropathic and anti-inflammatory effects.18,19 The bioactive fraction of C. cyminum has also been reported to enhance the bioavailability of erythromycin, cephalaxin, amoxycillin, fluconazole, ketoconazole, zidovudine, and 5-fluorouracil.20 The recent studies suggest that cumin may be developed as a lead to recover the immunity of immunocompromised individuals.21

Krishna Jeeraka (Carum carvi Linn.): Caraway was commonly used in phytomedicine as antibacterial, antiproliferative, laxative,22 antioxidant,23 antispasmodic,24,25 and miticidal drug.26 The major constituents of seeds are carvone, flavonoids and limonene. Myrcene, beta caryophyllene, thujone, anethole and pinene are present as minor components.27 The flavonoid constituents of caraway have constituents such as quercetin-3-glucuronides, isoquercitrin, quercetin 3-O caffeoylglycerol and kaempferol 3-glucoside.28 In human trials studies, some herbal preparations consisting predominantly of caraway have shown efficacy in relieving dyspeptic symptoms.29 Aqueous and solvent derived extracts of cumin increased amylase, protease, lipase and phytase activities.30 Antiproliferative activity of the methanolic extract of fruits was demonstrated using the tumour cell lines (MK-1, HeLa and B16F10).31 The seed extract showed antitumorogenic activity in experimental models in rats.32 The overall hypolipidemic effect is probably due to a counteraction of free radicals by its antioxidants i.e. Quercetin (flavonoids) and Carvone.33

Jeeraka Dwaya: The oils exhibited high antioxidant activity which has been attributed to the presence of monoterpene alcohols, linalool, carvacrol, anethole, estragol, flavonoids and other polyphenolic compounds.34,35,36,37,38 The attenuation of carcinogenicity by cumin and caraway has been attributed to their potential anti-oxidative action in the target tissues.39,40 The adaptogenic and anti-stress activity of its aqueous extract, related to its antioxidant properties, is documented in normal and stress induced rats.41 The antidiabetic effects of cumin and caraway products are amply documented.42 A significant pharmacokinetic interaction of some herbal products from cumin and caraway with anti-tubercular drugs has been revealed. This bio enhancing activity was found to be due to 3,5-dihydroxyflavone 7-O-β-d-galacturonide-4′-O-β-d-glucopyranoside. The altered bioavailability profile of anti-TB drugs could be attributed to a permeation enhancing effect of cumin and caraway.43,44 It seems reasonable to assume that the synergy between and within a particular class of compound might be responsible for the remarkable bioactivity profile of this herb.45

Upakunchika (Nigella sativa Linn.): The seeds are carminative, stimulant, diuretic, emmenagogue, galactagogue and are used in the treatment of mild cases of puerperal fever.46 Arabs believe that black seed (Upakunchika) N. sativa is the panacea for all diseases. Seed contains poisonous saponin malanthine, bitter alkaloid – nigellin, essential oil- cymine, nigellone, carvone, limonene and nigelline.47 Cell culture studies and animal models have indicated several therapeutic potentials, such as anti-cancer,48 antimicrobial,49 analgesic, anti-inflammatory,50 antipyretic,51 anti-nociceptive52 actions contraceptive and anti-fertility, anti-oxytocic and anti-oxidant53 potentials, for black seed and its active component thymoquinine. The seed extract and thymoquinone have shown anti-mutagenic property.45 Nimellone, a carbonyl polymer of thymoquinone isolated from seeds, was highly effective in inhibiting histamine release.55 It has been shown that the seed extract was effective against a variety of organisms (isolated from human patients suffering from septic arthritis), even those that were resistant to antibiotics.56 Methanolic and acetonie seed extracts of Kalaunji and Krishna Jeeraka were able to neutralize free radicals and carried antioxidant properties.57

Formulations containing Jeeraka: Pipalyadi Gana Kwatha, Bhaswamuladi Kwatha, Saubhagyavati Vati, Jivandanabhra (Vati), Amritarishta and Krishnadi Gana/Churna have been mentioned for Jwara. Kutajavaleha, Praneshwar Rasa, Mitrasanjiva Rasa and Amritanarva Rasa have been used for JwarAtisaraa. Similarly, Kutajaleha, Jatiphala Churna, Jatiphala Rasa and Abhayanasirisimha Rasa have been mentioned for Atisaraa. Jeeraka, known for its action in metabolism has been mentioned in a lot of formulations for Grahani viz. Dadimashataka Churna, Kapiththashtaka Churna, Lavangadi Churna (Svalpa), Lavangadi Churna (Brihat), Jatipladi Churna, Jeerakadi Churna, Kalyana Guda, Kushmanda Guda, Grahanikapata Rasa-5, Grahanigajendra Vati, Grahanishardula Vati, Piyushavalli Rasa, NripatiVallabha Rasa, Bruhanripavallabha Rasa, Jatiphaladi Vati (Brihat), Purnakalada Vati, Ajayadri Churna, Chakra Sandhana (Brihat), Grahanimihira Taila and Dadimam Taila. Velajadi Churna and Kapityaka Modaka are used in Arsha. Aigmukha Churna (Brihat), Aignitundi Vati, Bhaskara Rasa, Pashupata Rasa, Amrita Haritaki, Shardula Kanjikam and Mustakarisha are formulations mentioned for Aigmundaya.
Kamalantaka Lauha has been specified for Pandu and Kusmanda Khanda for Raktapitta. Lavangadi Churna, Brihad Vasavaleha-1, Chandramrita Rasa and Kumkumadi Ghrita have been mentioned for Rajayakshma. Chandramrita Rasa, Brihat Chandramrita Rasa, Chandramrita Lauha and Laxmi Vilasa Rasa are used for Kasas. Single formulations have also been mentioned like Bhargisharkara/ Avaleha (for Hikka-Shwasa), Jeeraka Ghrita (for Sadyovrana), Haridra Khanda-2 (for Udardashitapitakotha), Ashtanga Lavana/ Churna (for Madatayaya), Kalyanaka Churna (for Apasamara), Jeerakadi Ghrita (for Amlapitta), Krishnadya Yoga/ Churna (for Mukharoga) and Taptaraja Taila-2 (for Shiroroga).

Chavyadi Churna and Kalyanavaleha are formulations for Swarabhedha. Kavalagraha-1, Kavalagraha-4, Yavanishadava Churna and Nagaradi Churna have been mentioned for Arochaka. Lajadi Yoga-2/Churna and Chhardisankhara Rasa have been mentioned for Chhardi.

Kalyanakaleha, Rasona Pinda/Churna, Brihat Chchagaladi Ghrita (Haritaki), Kanji (Shukta) Nirmana, Nakula Taila, Mahamasha Taila-7 and Mahavishagarbha Taila have been introduced for Vatavyadh. Nimbi Churna plus Baladi Pralepa for Vatarakta and Pippalyadi Gana/Churna as well as Rasona Pralepa for Urusthambha. Hinvadhya Churna, Vatatagendra Simha/Vati, Vidangadi Lauha, Panchanana Lauha, Aagmaja Simha/Gutika, Maharasona Pinda/Asava and Rasona Sura have been described for Amavata.

Saurvachaladi Gutika, Shoolavajrini Vati, Dhatri Lauha-2, Shatavari Mandura(Brihata), Shatavari Mandura, Haritaki Khanda-1, Narikelha Kmanda Brihata, Dadhika Ghrita and Shool Gajendra Taila are to be used for Shool.

Pippalyadi Churna, Hingwadi Churna, Hingwadi Churna-1, Gulma Shaduka Rasa and Rasonadya Ghrita have been mentioned for Gulma. Shukramatrika Vati, Mehavajra Rasa, Mehavajra Rasa, Meghanada Rasa, Dadimadya Ghrita-1 and Dadimadya Ghrita-2 have been noted for Prameha. Formulations Chavyadi Shaktu, Vyoshadi Shaktu and Lobarishhta have been mentioned for Meda.

Takra, Takral, Kushthadi Churna and Mahavani Rasa are to be used for Udara. Similarly, Bhallatakadi Modaka and Rohitaka Ghrita-2 for Plihayakrta. Ajajyadi Churna, Kshetrapala Rasa for Shotha. Ajajyadi Lepa plus Bhaktotara Rasa for Vridhi and Panchatikta Ghrita Guggulu, Sindooradha Taila plus Shadbindu Taila for Vridhi.

Formulations for Pradana containing Jeeraka are Vataja Pradara Chikita/Churna, Utpaladi Churna, Shitakalyanaka Ghrita, Ashoka Ghrita, Lakshmanarista, Patrangasava plus Aparapatana Upaya/Churna has been indicated for Garbhini. Shaubhagyashuni-2, Panchajeevaka Guda and Jeerakadarista for Sutika. Amantharaha Churna, Yamanipanchaka vati, Dadimadi Churna, Kutajavaleha and Kantalakari Ghrita are used in Balaroga. Vrischikavisha Vedanahara/Churna has been used for treatment of Visha. Purnachandra Rasa and Purnachandra Rasa have been mentioned as Rasayana. Mammatha Rasa, Guda Kusmanda Khanda, Kamagni Sandipana Modaka/Avaleha and Cchagaladi Ghrita are used for Vajikarana.

The different dosage forms of Jeeraka have been shown in the form of a pie-chart. (Fig. 1 and 2) It shows that the maximum dosage form of Jeeraka is in the form of Churna (powder) that is 37 whereas the least number (1 each) were found in the form of Guggulu and Haritaki.

**Formulations containing Krishna Jeeraka**

Shitangaguna Udavatana/Churna, Shringlyadi Kwatha, Ajaji Guda Yoga and Katu Taila Murchhana have been noted for Jwara. Single formulations like Kankolodi Churna (for Arsha), Bhaktotapa Vati (for Agnimandya), Haridra Khanda (for Krimi), Pandu Panchananarasa (for Pandu), Pippalyadi Kwatha (for Kasa), Brihat Yograka Guggulu (for Amavata), Amlaki Khanda (for Shool), Gudapipalli Yoga (Brihata)/Modaka (for Plihayakrta), Takra Vati (for Shotha), Rudra Taila (for Shiroroga), Garbhapala Rasa (for Garbhini), Devedvaradi Kwatha (for Sutika) and Dashamoolarishtha (for Vajikarana) have also been mentioned. Krishna Jeeraka has been used in the maximum amount in the form of Khand, Modaka and Guda and least in the form of Guggulu and Arista (fermented preparations).

**Formulations containing Karvi: Sannipata Bhairava Rasa**
Formulations containing Bhrista Jeeraka: Jeerakadi Modaka has been mentioned for Grahani. Takra Prayoga has been indicated for Arochaka. Lavangachatushsama Churna and Dadimachatushsama Churna has been noted for Baloroga.

Formulations containing Jeeraka Dwaya: Jwaranagamayura Churna, Jwarantaka Lauha, Shleshmashailendra rasa, Mritasanjivani Sura and Brihat Kiratadi Taila have been mentioned for Jwara and Siddha Praneshwar Rasa for JwarAtisaraa. Lavangadi Churna (Mahat), Shreekameshwar Modaka, Madan Modaka, Methi Modaka, Brihata Methi Modaka, Mustakadi Modaka, Kameshwara Modaka, Mustakadha Modaka, Agnikumara Modaka, Pancamrit Mandura and Mahashatapala Ghrita have been mentioned for Grahani.

Hingwastaka Churna, Lavanabhaskara Churna, Lavangadi Vati-2, Aghisandipana Rasa, Bhaktavipaka Vati-2 and Lavangadh Modaka have been mentioned for Agnimitra. Single formulations like Panchamrit Mandura (for Panduroga), Brihada Vasavaleha-3 (for Rajayakshma), Saraswata Churna (for Unmada), Yograja Guggulu Vati (for Vatavyadhi), Dwadashayasa Vati (for Vatarakta), Vidangadi Lauha (for Prameha) and Pushkara Leha (for Pradara).

Jeeraka Dwaya have been mentioned as an ingredient in formulations for Shoola like Puga Khandha-1, Narikela Khandha, Narikelamrita/Paka as well as Bijapuradi Ghrita and Kankayana Gutika, Rasayanamrita Rasa have been mentioned for Gulna. Manadi Gutika and Chitraka Ghrita have been mentioned for Pilihayakritta. Ekadashayasa Rasa and Shatpushpadiya Ghrita have been mentioned for Fridhhi. Formulations like Panchanana Gutika, Kshudhavati Gutika-1, Kshudhavati Gutika-2, Kshudhavati Gutika-3, Sauhbhagayushthi Modaka, Pipppali Khanda-1 and Pipppali Khanda-2 have been mentioned for the treatment of Amlapitta. Sneha Kalkpana like Dashamool Taila-5, Dashamoola Taila-7 and Taptaraja Taila-1 have been mentioned for the treatment of Shiroroga. As for Sutika, Vajrakanjika/Paka, Shubaagbashunti-1, Shubaagbashunti-3, Jeerakadi Modaka and Bhadroukatada Ghrita have been mentioned.

Vajikarana formulations include Khandabhra/Paka, Kameshwara Modaka-1, Kameshwara Modaka-2, Mahakameshwar Modaka, Shrimadanandana Modaka, Rativallabha Modaka and Mrita Sanjivani Sura.

Formulations containing Mangrela+Shveta Jeeraka: Single formulation of the combination of Mangrela and Shveta Jeeraka has been mentioned for different diseases like Praneshwara Rasa (for Jwara), Karvya Vati (for Arochaka), Yograja Guggulu (for Anavata), Hapushadi Ghrita (for Gulma), Ekanishthita Guggulu (for Kushtha), Shunthi Khanda (for Amlapitta) and Vachadi Churna (for Yonivyapada).

Formulations containing Jeeraka Travya: Aayama Kanji has been mentioned for Grahani, Takrarishtha for Arsha and Narayan Churna for Udara.

Mode of Action: Grahani and Agni have Adhara-Adheya-Sambandha and Paraspapa Upakaraka Bhava. i.e. they are interdependent. Mandagni (deficient digestive power) causes improper digestion which is the principal cause of Ama Dosha and it is the crucial factor causing diseases. In children, the beginning of Anada Avastha (weaning period) and the characteristics of Balyavastha (childhood period) are described as Aparipakva Dhatu (immature tissues), Asampurna Balam (inadequate strength), Anyayata Agni (irregular metabolism) etc. During this period, any mild etiological factor can impair Agni easily and disturb the digestive system. Hence, Jeeraka has been used accordingly in some of the paediatric formulations in this pharmaceutical lexicon. N. sativa oil, given intraperitoneally, has been shown to exhibit a potent action against murine cytomegalovirus infection in mice. The action was suggested to be related to the potentiating action of the oil on innate immunity.

Because of its Laghu (light), Ruksha (dry) and Katu (pungent) Gunas (qualities), Tikta (bitter) Rasa (dominant with Agni, Vayu and Akasha Mahabhuta), it subsides the aggrivated Kapha. Ushna Veerya (warm potency), counteracts Vata, brings about Vatamulomana (re-directing the normal course of Vata Dosha) and stimulates Jatharagni (principal digestive power), which in turn stimulates all other Agni (digestive power) and brings about the Pushthi (nourishment) of Saptadhatus (seven basic tissues). Due to its Laghu, Ruksha and Ushna Veerya, it removes Strorotorodha (occlusion of channels) as it penetrates minute Strotras (channels) in fig 3.

Jeeraka has been used in the diseases which require Deepana (increases appetite), Pachana (kindles digestive fire) and which have Ama as an aetiological factor. The Ayurvedic treatise states that, Mandagni is the root cause of all diseases which arises from indigestion, contaminated food and accumulation of Mala (Dosha and waste products). The aggravated Dhatu occude the flow of fluid (lymph, blood, water, enzymes) in their Urdhwa and AdhoGaman (upward and downward movement). This in turn bring about abnormalities in Prana (life energy that performs respiration, oxygenation and circulation), Agni (digestive power) and Apana (energy related to excretion) resulting in accumulation of water in between Twacha (skin), muscles (Mansu) and joints (Sandhi). Hence, Jeeraka which acts at different Dhatu levels to increase Agni and bring about Vatamulomana has a myriad of uses that benefit human health (Fig.3). The usage of Jeeraka in any form may have been done to enhance the potential of the formulation. The synergistic potential of Jeeraka with other drugs to increase the therapeutic potential of the formulation as a whole cannot be denied. However, further studies are required to be conducted in this light to confirm and support the biological effects of these indigenous drugs.
Fig 3: Probable mode of action of Jeeraka

**Future Scope:** All the three components of the Jeeraka Traya should be studied extensively in both healthy and diseased individuals. The classical references should be tested in both Ayurvedic and contemporary parameters to ascertain the mode of action and assess the true dose relationship. Its role as a major and minor ingredient of a formulation should also be ascertained with clinical trials. Present review strongly recommends the new research works regarding the traditional use of the condiment.

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</table>

**CONCLUSION**

Although the use of a single compendium are limits the potentialities of Jeeraka in treating other diseases not mentioned in the text, its ability to heal 44 diseases in itself is remarkable. It has been mentioned as a *Pathya* (congenial) in some diseases as well. It can be concluded that when Jeeraka is formulated with other herbo-mineral substances and given along with different *Anupana* (adjuvant) it has the potential to synergistically cure wide array of diseases like *Jwara* (fever), *Agnimandya* (digestive impairment), *Rajayakshma* (tuberculosis), *Vatavyadhi* (diseases due to *Vata* Dosha), *YakritPleeharoga* (Liver and Spleen disorders), *Udara* (ascites), *Gulma* (Lump in abdomen), *Kushtha* (Skin diseases), *Hridroga* (cardiac disorders), *Amlapitta* (dyspepsia), *Medoroga* (lipid disorders), *Shigoraga* (diseases of head), etc. This also emphasizes the recent research works that further strengthens the therapeutic diversity which aromatic Jeeraka has to cater to humans.

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