

A CRITICAL REVIEW AND ANALYSIS OF MEDICINAL IMPORTANCE OF SPICES NATIVE TO INDIAN KITCHEN

¹Dr. Divya K ²Dr. Akshatha Rao KL ³Dr. Prasusha M

¹Associate Professor, Department of Agada Tantra, ²Assistant Professor, Department of Swasthavrutta, KTGAMC, ³RMO, KTG Ayurveda Hospital, Bangalore

ABSTRACT

Spices are ingredients mainly used to season a food dish during its preparation. It plays a vital role in Indian diet. Variety of spices used in Indian kitchen are described in Ayurveda having medicinal properties such as Deepaniya, Pachaniya, Rochaniya etc and indicated in treatment of Ajeerna, Agnimandya, Kasa, Shwasa and many other diseases. One of the most important uses of spices is to kindle our agni which is imperative for proper digestion which is critical for optimum health. The objective of present work is to carefully study the medicinal value of spices used in Indian kitchen as described in Ayurveda and analyzing it with modern pharmacological parameters. Ayurvedic texts books were scrutinized and information on Spices were collected and described orderly and research information regarding pharmacological actions of active principles of spices were studied through journals. The careful analysis of their pharmacological actions substantiate the traditional usage of them in both preventive and curative aspects.

KEYWORDS: Aahara, Agni, Spices, Pharmacoligical Action, Rasa panchaka

INTRODUCTION

Ayurveda the ancient science of life has always emphasized the importance of food and nutrition. It has given prime importance to Food / Aahara through different concepts like Ahara Varga¹ (Different categories of food and drink), Rasapanchaka (properties), Aahara Vidhi Vidhana² (Dietary guidelines), Ashta Aahara Vidhi Visheshha Aayatana³ (8 primordial factors regarding food), Nitya sevaniya Aahara (Daily consumables), Ritu Anusara Aahara (seasonal diet), Diet according to Prakruti and Vikruti (health and diseased) and so on.

In the classical texts of Ayurveda Aahara dravya are explained with respect to: Rasa (taste), Guna⁴ (qualities), Veerya (potency), Vipaka (final transformation), Karma (functions). Ayurveda accepts Shadrasas

namely⁵: Madhura (sweet), Amla (sour), Lavana (salt), Katu (pungent), tikta (bitter) and Kashaya (astringent). Veerya⁶ signifies the potency of the drug either Ushna (hot) or Sheeta (cold). Vipaka⁷ refers to the bio transformation which is categorized into Madhura, Amla and Katu vipaka. Karma⁸ refers to the effect of these food substances on Sharira / body which is comprised of three doshas (Vata, pitta and kapha : the bodily humours), Dhatus (tissues - Rasa (lymphatics), Rakta (blood), Mamsa (muscle) Asthi (bone), Majja (marrow) Shukra (reproductive system) and three Malas, Sweda (sweat), Mutra (urine) and Purisha (feces) Spices include seeds, fruit, bark or other plant substances used for flavoring and coloring food. Spices have

always been an important and inseparable ingredient in Indian kitchen. India accounts for nearly 75% of spice production in the world. In this article an effort has been made to evaluate the medicinal value of the important spices used in the Indian kitchen

from the Ayurvedic perspective through Ayurveda texts and journals. The spices dealt in this article are: Haridra, Sunthi, Maricha, Jeeraka, Lavanga, Hingu, Twak, Ela, Lasuna, Patra, Ajamoda, Methika, Dhanyaka, Mishreya, Kumkuma, Jatiphala, Sarshapa.

Table 1: List of spices and their properties according to Ayurveda⁹

Sl no	Spice	Part used	Rasa	Guna	Veerya	Vipaka	Doshahara Karma	Rogahara Karma
1	Haridra (<i>Curcuma longa</i>)	Rhizome	Tikta, Katu	Laghu, Rooksha	Ushna	Katu	Kaphapitta shamaka Ruchikara Varnya	Krimi, kushtha Prameha Vrana Shotha
2	Sunthi (<i>Zingiber officinale</i>)	Rhizome	Katu	Laghu, Snigdha	Ushna	Madhura	Vatahara Deepana Pachana Swarya Ruchya	Ajeerna Agnimandhya Amavata Shoola Arshas Swasa, kasa Vibandha
3	Maricha (<i>Piper nigrum</i>)	Fruit	Katu	Laghu Teekshna	Ushna	Katu	Kaphavata shamaka Ruchikara Deepana	Agnimandhya Shoola Swasa, kasa Krimi Vata vyadhi
4	Jeeraka (<i>Cuminum cyminum</i>)	Seeds	Katu	Laghu, Rooksha	Ushna	Katu	Kaphavata shamaka Deepana Pachana Vrushya Grahigarbha shaya shodhaka	Ajeerna Agnimandhya Shoola Krimi Grahi, garbhashaya vikara Atisara
5	Lavanga (<i>Syzygium aromaticum</i>)	Flower bud	Katu	Laghu, Snigdha Teekshna	Sheeta	Katu	Kaphapitta shamaka Deepana Pachana Swarya Ruchya Netrya	Chardi Shula Hikka Jwara Visha
6	Hingu (<i>Ferula foetide</i>)	Resin	Tikta, Katu	Laghu, Teekshna	Ushna	Katu	Kaphavata shamaka Deepana Pachana Ruchya Netrya Hridya	Agnimandhya Shoola Gulma Udara Kasa shwasa Krimi

7	Twak (<i>Cinnamomum zeylanica</i>)	Bark	Tikta, Katu Madhu ra	Laghu, Teekshna	Ushna	Katu	Kaphavata shamaka Deepana Pachana Ruchya Balya bastishodhaka	Kasa shwasa pinasa Kantha shoola Agnimandhya Shoola Krimi Chardi Shirahshula
8	Ela (<i>Elatteria cardomomum</i>)	Fruit	Katu Madhu ra	Laghu, Rooksha	Sheeta	Madhu ra	Vatapitta shamaka Deepana Pachana Ruchya Mukha shodhaka	Kasa shwasa Mutrakrichra Hridroga chardi
9	Lashuna (<i>Allium sativum</i>)	Bulb	Tikta, Katu	Guru , Snigdha Teekshna	Ushna	Katu	Kaphavata shamaka Pachana Bhagnasand hana krita Varnya, keshya, netrya,kanthya ,	Vataroga Agnimandhya Shoola Kasa shwasa Arshas
10	Patra (<i>Cinnamomum tamala</i>)	Leaf	Tikta, Katu Madhu ra	Laghu, Teekshna	Ushna	Katu	Kaphavata shamaka Vishahara Mukha mastaka shodhana	Hrillasa Arcuhi Peenasa Basti kandu
11	Ajamoda (<i>Apium graveolans</i>)	Seeds	Tikta, Katu	Laghu, Teekshna Rooksha	Ushna	Katu	Kaphavata shamaka Deepana Hridya Ruchya Balya	Krimi Chardi Hikka Bastiruja Netra roga
12	Methika (<i>Trigonella foenum-graecum</i>)	seeds	Katu	Rooksha	Ushna	Katu	Kaphavata shamaka Deepana Balya Vaajekara	Aruchi jwara
13	Dhanyaka (<i>Coriandrum sativum</i>)	Seeds	Kashaya tikta	Laghu rooksha	Ushna	Madhu ra	Tridosahara Deepana Graahi Ruchya	Daha Chardi Kasa shwasa krimi
14	Mishreya (<i>Foeniculum</i>)	Seeds	Tikta, Katu	Laghu, Rooksha	Ushna	Madhu ra	Kaphavata shamaka	Agnimandya Kasa

	<i>vulgare</i>)		Madhu ra				Hridya Deepana Yonishoolah ara	Vamana Shwasa Vibandha
15	Kumkuma (<i>Crocus sativus</i>)	Stamen	Tikta, Katu	Snigdha	Ushna	Katu	Tridosahara Varnya	Shiroruja Vrana Jantu Chardi Vyanga
16	Jatiphala (<i>Myristica fragrans</i>)	Seed, seed coat	Tikta, Katu	Laghu Teekshn a	Ushna	Katu	Kaphavata shamaka Graahi	Mukha dourgandhya Kantharoga Atisara Prameha Krimi Kasa shwasa Shosha
17	Sarshapa (<i>Brassica juncea</i>)	Seeds	Tikta, Katu	Laghu Snigdha	Ushna	Katu	Kaphavata shamaka Hridya Deepana	Kushtha Kandu Kantha roga Krimi Shoola Aama

Table 2: Showing Pharmacological action of the spices

Sl no	Spice	Active principle	Pharmacological action
1	Haridra ¹⁰ (<i>Curcuma longa</i>)	Curcumin	antibacterial, anti-inflammatory, hypoglycemic, antimicrobial, wound healing, digestive stimulant .
2	Sunthi ¹¹ (<i>Zingiber officinale</i>)	Bisapoline Zingiberene Zingerol Volatile oil	Carminative, GI stimulant, antispasmodic, vasodilator, appetizer, expectorant, bronchodilator, topical and local stimulant, analgesic, aphrodisiac, laxative, antitussive, ant flatulent, relief from pain in rheumatoid arthritis
3	Maricha ¹² (<i>Piper nigrum</i>)	Piperine	Antibacterial, antioxidant, anticancerous, digestive, antidepressant, antiplatelet, anticonvulsant
4	Jeeraka ¹³ (<i>Cuminum cyminum</i>)	Anthroquinone Coumarine Flavonoid Saponin, tannin, steroids	Antimicrobial, antifungal, Antibacterial, anticancerous Analgesic, antiinflmaatory, CNS Stimulant, hypotussive, hypolipedemic, bronchodilatory

5	Lavanga ¹⁴ (<i>Syzygium aromaticum</i>)	Eugenol	Analgesic, antiinflammatory, antioxidant, anticancerous, antifungal, antiviral, antibacterial, antispasmodic, antidepressant,
6	Hingu ¹⁵ (<i>Ferula foetida</i>)	ferulic acid, umbelliferone, Resin- glucose, rhamnosa, glucuronic acid,	antiinflammatory, anticancerous, vasodilation, antispasmodic, expectorant, vermifuge, sedative, reduces blood pressure
7	Twak ¹⁶ (<i>Cinnamomum zeylanica</i>)	Essential oils – transcinnamaldehyde, eugenol, linalool,	Antimicrobial, antiparasitic, antioxidant, anti secretagogue, anti gastric ulcer, anti nociceptive, wound healing, hepatoprotective
8	Ela ¹⁷ (<i>Elatteria cardomomum</i>)	Volatile oil, phenolic acid, sterol, phytol	Carminative, stomachic, diuretic, antibacterial, antiviral, antifungal, anti hypertensive, gastroprotective, antiplatelet aggregation,
9	Lashuna ¹⁸ (<i>Allium sativum</i>)	Allicine.	Anti-inflammatory, Gastro-protective, Anti-cancerous, antioxidant, antidiabetic, antibiotic
10	Patra ¹⁹ (<i>Cinnamomum tamala</i>)	Essential oil	Antibacterial, antifungal, antidiabetic, hypolipidemic, carminative, sedative, anti depressant, cytoprotective
11	Ajamoda ²⁰ (<i>Apium graveolans</i>)	Flavonoids, volatile oil	Antimicrobial, antihelminthic, hypolipidemic, anti inflammatory, inhibition of gastric lesions, anti depressant, anti proliferative
12	Methika ²¹ (<i>Trigonella foenum-graecum</i>)	Saponins- diosgenin, genitogenic	Carminative, gastric stimulant, anti diabetic, galactagogue, anti ulcer, hypolipidemic, hepatoprotective, anti inflammatory, antifungal
13	Dhanyaka ²² (<i>Coriandrum sativum</i>)	monoterpenes, α -pinene, limonene, γ -terpinene, p-cymene, borneol, citronellol, camphor, geraniol, coriandrin, dihydrocoriandrin, coriandrin A-E, flavonoids and essential oil	Diuretic, Antioxidant Activity, Ant-diabetic Anti-convulsant activity, Sedative Hypnotic Activity, Anti-microbial Activity, Anti mutagenic, Anthelmintic activity, diaphoretic
14	Mishreya ²³ (<i>Foeniculum vulgare</i>)	Volatile compounds, phenolic compounds	Anti-microbial Activity, anti inflammatory, Anti Mutagenic, Antinociceptive, antipyretic, antispasmodic, antithrombotic,

			hepatoprotective, memory enhancing
15	Kumkuma ²⁴ (<i>Crocus sativus</i>)	Terpene, terpene alcohol	Antihypertensive, anticonvulsant, anti tussive, antioxidant, anti depressant, Antinosiseptive, anti inflammatory
16	Jatiphala ²⁵ (<i>Myrstica fragrans</i>)	Terpenin, limonene, b- pinene	Anticancer, anti depressant, antidiabetic, anti obesity, analgesic, antioxidant, antimicrobial, hepatoprotective, memory enhancing
17	Sarshapa ²⁶ (<i>Brassica juncea</i>)	Allyl isothiocyante, butyl isothiocyante	antioxidant, anti inflammatory, antiviral, bacteriostatic

DISCUSSION

As we analyze the Rasa panchaka of the foresaid spices they are predominant with Tikta(bitter), Katu (pungent) rasa, having Laghu, Ruksha and Teekshna gunas, Ushna veerya and Katu vipaka. With these properties they exhibit Vata and Kapha hara action. Therefore they are mainly indicated in the disorders caused by these two doshas such as Aruchi (loss of taste), Agnimandya (reduced power of digestion), Ajeerna (indigestion), Kasa (cough), Shwasa (Dyspnoea) etc. Most of the spices have been said to possess Deepana and Pachana qualities.

Ayurveda lays great emphasis on the concept of Agni. 13 types of Agni are described²⁷ where in Jatharagni (digestive fire) is given prime importance as the functioning of rest of them depend on it. The homeostasis of Agni is a key for maintenance of health. The reduced functioning of this very Jatharagni results in Agnimandhya leading to formation of Aama (reduced metabolism leading to accumulation of toxins) that evolves into various other diseases in combination with the Doshas. Deepana refers to increasing the activity of Jatharagni where as Pachana does the Ama pachana (correction of metabolism). The pharmacological actions such as Gastroprotective, anti microbial, anti bacterial, anti ulcer, anti inflammatory, anti

gastric ulcer, hepatoprotective, antispasmodic etc substantiate the same. Therefore they are highly recommended in diseases of GIT.

As several metabolic diseases, age-related degenerative disorders, cardiovascular disorders etc are closely associated with oxidative processes in the body, the use of herbs and spices as a source of antioxidants to combat oxidation warrants further attention.²⁸

Also most of the spices have antimicrobial, antibacterial, antifungal activity. Hence in individual or combined forms they increase the shelf life of food products thus exhibiting preservative action.

Few of the spices have specific individual actions apart from being Deepana, pachana, krimighna.

Examples:

1. Jeeraka having Garbhashaya shodhaka activity²⁹ is used in treating garbhashaya vikaras or disorders of uterus/Female reproductive system, like Kashtartava(dysmenorrhea), Fibroid uterus, endometriosis. The anti inflammatory, analgesic, anticancerous, antiestrogenic activities of the drug substantiate this.

2. Mishreya is said to have yonishoola hara action³⁰. The antispasmodic activity of mishreya relieves dysmenorrhea.

3. Twak is said to have bastishodhaka property (cleansing the bladder).

Studies show that the drug has antimicrobial action against bacteria and fungi causing urinary tract infections³¹

Factors which alter the pharmacological action of drugs:

1. The action of the drug depends on the physical form of the drug. Example: Ardraka/ wet ginger has different action compared to Shunti/dry ginger. Shunti is effective in Kasa, shwasa compared to Ardraka.

2. The drug action varies according to its dosage forms. Example: the action of Jeeraka is different in different systems based on dosage forms like Jeeraka arishta (fermented preparation) works effectively in Respiratory diseases, Jeerakadi kashaya is used in GIT problems like flatulence and so on.

3. As majority of the spices contain volatile oil they are not suitable in Kashaya (decoctions) forms as the active principle are lost in heating and thus reduces its efficacy.

4. The drug action varies according to combinations used. A fresh piece of ginger taken with a pinch of salt before food instantly increases the depleted digestive power. Similarly combination of Pippali and Shunthi is best for Udarashula (colic pain) caused by Kapha dosha

CONCLUSION

Ayurveda firmly believes the body is sustained by nutritious food and improper diet is the root cause of all diseases. Spices form an integral part of food in Indian kitchen. A variety of spices are used in Indian kitchen as flavor, color, aroma and taste enhancers. In Ayurveda, most of the spices used are described to have various medicinal properties which are already explained. Various research activities conducted over the decades on spices where in the isolated bioactive compounds of them proven having definite pharmacological actions further support their traditional usage.

REFERENCES

1. Vagbhata , Ashtanga Hridaya, Hindi Commentary by Dr. Harishchandra Simha

Kushawaha, Sutra sthana , Chapter 6, Varanasi, Chaukhamba Orientalia, 1st edition, pg: 242-345

2. Charak samhita of Agnivesha, elaborated by Charaka & Dridhabala, Chakrapanidutta commentary, Vimana Sthana, Chapter 1, Verse 24, pg:236

3. Charak samhita of Agnivesha, elaborated by Charaka & Dridhabala, Chakrapanidutta commentary, Vimana Sthana, Chapter 1, Verse 21, pg:235

4. Charak samhita of Agnivesha, elaborated by Charaka & Dridhabala, Chakrapanidutta commentary, Sutra Sthana, Chapter 1, Verse 51, pg:13

5. Charak samhita of Agnivesha, elaborated by Charaka & Dridhabala, Chakrapanidutta commentary, Sutra Sthana, Chapter 1, Verse 65, pg:18

6. Vagbhata , Ashtanga Hridaya, Hindi Commentary by Dr. Harishchandra Simha Kushawaha, Sutra sthana , Chapter 1/16, Varanasi, Chaukhamba Orientalia, 1st edition, pg: 33

7. Vagbhata , Ashtanga Hridaya, Hindi Commentary by Dr. Harishchandra Simha Kushawaha, Sutra sthana , Chapter 1/17, Varanasi, Chaukhamba Orientalia, 1st edition, pg: 34

8. Charak samhita of Agnivesha, elaborated by Charaka & Dridhabala, Chakrapanidutta commentary, Sutra Sthana, Chapter 1, Verse 52, pg:13

9. Dr.Prakash L Hegde, Dr. Harini A, ‘ Text book of Dravyaguna Vignana’, Volume 2, Reprint edition: 2019, Chaukhamba Publications, Varanasi.

10. Prasad S, Aggarwal BB. Turmeric, the Golden Spice: From Traditional Medicine to Modern Medicine. In: Benzie IFF, Wachtel-Galor S, editors. Herbal Medicine: Biomolecular and Clinical Aspects. 2nd edition. Boca Raton (FL): CRC Press/Taylor & Francis; 2011. Chapter 13. Available from:

<https://www.ncbi.nlm.nih.gov/books/NBK92752/>

11. Mao QQ, Xu XY, Cao SY, Gan RY, Corke H, Beta T, Li HB. Bioactive Compounds and Bioactivities of Ginger (*Zingiber officinale* Roscoe). *Foods*. 2019 May 30;8(6):185. doi: 10.3390/foods8060185. PMID: 31151279; PMCID: PMC6616534
12. Arun Kumar Shrivastava, Vinay kumar singh, 'Biological action of piper nigrum- the king of spices', *European Journal of Biological Research*, 2017; 7(3); 223-233
13. Prof Dr Ali Esmail Al-Snafi, The pharmacological activities of Cuminum cyminum - A review, *IOSR Journal Of Pharmacy(e)*-ISSN: 2250-3013, (p)-ISSN: 2319-4219, Volume 6, Issue 6 Version. 2 (June 2016), PP. 46-65
14. Gaber El-Saber Batiha, Luay M. Alkazmi, Lamiaa G. Wasef, Amany Magdy Beshbishy, Eman H. Nadwa, and Eman K. Rashwan, 'Syzygium aromaticum L. (Myrtaceae): Traditional Uses, Bioactive Chemical Constituents, Pharmacological and Toxicological Activities', *Biomolecules*. 2020 Feb; 10(2): 202
15. Mahendra P, Bisht S. Ferula asafoetida: Traditional uses and pharmacological activity. *Pharmacogn Rev*. 2012 Jul;6(12):141-6. doi: 10.4103/0973-7847.99948. PMID: 23055640; PMCID: PMC3459456.
16. Belemkar, Sateesh & Kumar, Abhimanyu & Pata, Muslim. (2013). Pharmacological screening of herbal extract of Piper nigrum (Maricha) and Cinnamomum zeylanicum for Anticonvulsant activity.. *Inventi Rapid: Ethnopharmacology*. 2013(2):1-5, 2013.
17. Rahman MM, Alam MN, Ulla A, Sumi FA, Subhan N, Khan T, Sikder B, Hossain H, Reza HM, Alam MA. Cardamom powder supplementation prevents obesity, improves glucose intolerance, inflammation and oxidative stress in liver of high carbohydrate high fat diet induced obese rats. *Lipids Health Dis*. 2017 Aug 14;16(1):151. doi: 10.1186/s12944-017-0539-x. PMID: 28806968; PMCID: PMC5557534.
18. El-Saber Batiha G, Magdy Beshbishy A, G Wasef L, Elewa YHA, A Al-Sagan A, Abd El-Hack ME, Taha AE, M Abd-Elhakim Y, Prasad Devkota H. Chemical Constituents and Pharmacological Activities of Garlic (*Allium sativum* L.): A Review. *Nutrients*. 2020 Mar 24;12(3):872. doi: 10.3390/nu12030872. PMID: 32213941; PMCID: PMC7146530.
19. Mehta S, Purohit VK, Andola HC (2014) Pharmacological Activities of Cinnamomum tamala Nees & Eberm. and Medical Implication: A Review. *Med Aromat Plants* 3: 174. doi:10.4172/2167-0412.1000174
20. Ali Esmail Al-Snafi, 'The Pharmacology of Apium graveolens. - A Review, *International Journal for Pharmaceutical Research Scholars (IJPRS)*, IJPRS/V3/I1/00117
21. Yadav UC, Baquer NZ. Pharmacological effects of Trigonella foenum-graecum L. in health and disease. *Pharm Biol*. 2014 Feb;52(2):243-54. doi: 10.3109/13880209.2013.826247. Epub 2013 Oct 9. PMID: 24102093.
22. Laribi B, Kouki K, M'Hamdi M, Bettaieb T. Coriander (*Coriandrum sativum* L.) and its bioactive constituents. *Fitoterapia*. 2015 Jun;103:9-26. doi: 10.1016/j.fitote.2015.03.012. Epub 2015 Mar 14. PMID: 25776008.
23. Bokaie M, Farajkhoda T, Enjezab B, Khoshbin A, Karimi-Zarchi M. Oral fennel (*Foeniculum vulgare*) drop effect on primary dysmenorrhea: Effectiveness of herbal drug. *Iran J Nurs Midwifery Res*. 2013 Mar;18(2):128-32. Erratum in: *Iran J Nurs Midwifery Res*. 2014 Mar;19(2):216. Zarchi Mojgan, Karimi [corrected to Karimi-Zarchi, Mojgan]. PMID: 23983742; PMCID: PMC3748568.
24. Srivastava R, Ahmed H, Dixit RK, Dharamveer, Saraf SA. Crocus sativus L.: A comprehensive review. *Pharmacogn Rev*. 2010 Jul;4(8):200-8. doi: 10.4103/0973-7847.70919. PMID: 22228962; PMCID: PMC3249922.

25. Gomathi Periasamy, Aman Karim, Mebrahtom Gibrelibanos, Gereziher Gebremedhin, Anwar-ul-Hassan Gilani, Chapter 69 - Nutmeg (*Myristica fragrans* Houtt.) Oils, Editor(s): Victor R. Preedy, Essential Oils in Food Preservation, Flavor and Safety, Academic Press, 2016, Pages 607-616, ISBN 9780124166417, <https://doi.org/10.1016/B978-0-12-416641-7.00069-9>.

26. Yan Tian & Fangming Deng (2020) Phytochemistry and biological activity of mustard (*Brassica juncea*): a review, *CyTA - Journal of Food*, 18:1, 704-718, DOI: 10.1080/19476337.2020.1833988

27. Charak samhita of Agnivesha, elaborated by Charaka & Dridhabala, Chakrapanidutta commentary, Chikitsa Sthana, Chapter 15, Verse 38, Chakradutta commentary, pg:516

28. Vasanthi HR, Parameswari RP. Indian spices for healthy heart - an overview. *Curr Cardiol Rev.* 2010 Nov;6(4):274-9. doi: 10.2174/157340310793566172. PMID: 22043203; PMCID: PMC3083808.

29. Text book of Dravyaguna by Dr, K, Nishteshwar, Varnasi: Chowkamba

Surabharathi Prakashan, edition 2015, pg:243

30. Text book of Dravyaguna by Dr, K, Nishteshwar, Varnasi: Chowkamba Surabharathi Prakashan, edition 2015, pg:236

31. Thiagarajan S, John S. Antimicrobial activity of *Cinnamomum zeylanicum* aqueous extract against bacteria and fungi responsible for urinary tract infection. *Int J Health Allied Sci* 2020 ; 9:229-32.

CORRESPONDING AUTHOR

Dr Prasusha M

RMO, KTG Ayurveda Hospital, Bangalore
Karnataka-India

Email: prasusham@gmail.com

Source of support: Nil

Conflict of interest: None Declared

Cite this article as

Dr Prasusha M: A Critical Review and Analysis of Medicinal Importance of Spices Native to Indian Kitchen; VII(6): 2223-2231