



A PHARMACOLOGICAL REVIEW ON TRIPHALADI KWATHA – AN AYURVEDIC FORMULATION FOR STOMATITIS

Divya Thapliyal¹, Usha Sharma², Shuchi Mitra³, Khem Chand Sharma⁴

¹P.G. Scholar, P.G. Department of Rasa Shastra & Bhaishajya Kalpana, Uttarakhanda Ayurveda University, Rishikul campus, Haridwar.

²Professor, P.G. Department of Rasa Shastra & Bhaishajya Kalpana, Uttarakhanda Ayurveda University, Rishikul campus, Haridwar.

³Associate Professor, P.G. Department of Rasa Shastra & Bhaishajya Kalpana, Uttarakhanda Ayurveda University, Rishikul campus, Haridwar.

⁴Professor & Head of the Department, P.G. Department of Rasa Shastra & Bhaishajya Kalpana, Uttarakhand Ayurveda University, Rishikul campus, Haridwar.

Corresponding Author: divyathapliyal253262@gmail.com

<https://doi.org/10.46607/iamj1012062024>

(Published Online: June 2024)

Open Access

© International Ayurvedic Medical Journal, India 2024

Article Received: 06/05/2024 - Peer Reviewed: 27/05/2024 - Accepted for Publication: 15/06/2024.



ABSTRACT

Dental hygiene is crucial to overall health. The inflammation of the mucous membranes of lips, mouth and cheeks is known as *Mukhapaka* (stomatitis). It is a universal health issue that almost everyone faces. Although it is an inconsequential fact, it restricts day-to-day activities. Stomatitis has an overall prevalence rate of 18.93% in India, with most patients ranging between the age of 20 to 30. Traditional medical systems are considered to be safer in terms of receiving treatment. In classical texts, numerous formulations exist for oral diseases like *Laghukhadiradi vati*, *Irimedadi taila*, *Kamadudha Rasa*, *Jatyadi kwatha*, etc. *Triphaladi Kwatha* is one of the polyherbal formulation comprised of *Haritaki* (*Terminalia chebula* Retz.), *Bibhitaki* (*Terminalia bellerica* Roxb.), *Amalaki* (*Emblia officinalis* Gaertn.), *Jatipatra* (*Jasminum officinale* Linn.), *Patha* (*Cissampelos pareira* Linn.) & *Mridvika* (*Vitis vinifera* Linn.). Each of the aforesaid drugs has Antibacterial, Antifungal, and ulcer healing properties to confront stomatitis. In contrast, *Triphala* possesses various bioactive substances, i.e. flavonoids, saponins, anthraquinones

& amino acids, that promote the maintenance and encouragement of good oral hygiene by exerting a cleansing activity and strengthening the defence mechanism in the oral cavity. Patha shows anti-ulcer properties due to the presence of flavonoids, i.e., Quercetin. At the same time, Phenolic compounds in *Mridvika*, i.e. resveratrol, exhibit potent antifungal activity against the human pathogenic fungi *Candida albicans*.

INTRODUCTION

The current scenario is witnessing several mouth-related disorders mainly related to increased improper dietary habits. The *Mukha*, i.e. oral cavity, works as a reflector of body health by acting as a gateway to the alimentary canal and is considered the most salient part of the Head & Neck.¹ In India, the overall prevalence of Stomatitis was found to be 18.93% and these patients mainly belong to the age group of 20-30 years.² Recurrent Aphthous Ulcer (RAU) or Recurrent Aphthous Stomatitis (RAS), more widespread known as mouth ulcers have an impact on approximately 25% of the world's population.³

Stomatitis is derived from the Greek word *stoma*, meaning "mouth" and the suffix - *itis*, meaning "inflammation". Stomatitis refers to any inflammatory process affecting the mucous membranes of the mouth with or without ulceration. Stomatitis is a painful and often recurrent inflammatory disease that can manifest itself secondary to various well-defined disease processes.⁴ The clinical symptoms of Stomatitis correlate with *Mukhapaka*.⁵ It is depicted under the 40 *Nanatmaja Pitta Rogas* as per Acharya Charaka. He elucidated 64 types of *Mukharoga* meantime Acharya Vagbhatta had illustrated 75 types of *Mukharoga*. Acharya Dalhana in his commentary on Sushruta Samhita propounds about *Mukhapaka* as primarily and purely a *Pittaja Vikara* However Acharya Sushruta has categorised *Sarvasara Mukharoga* as *Vataja*, *Pittaja* and *Kaphaja*, where the aggravated *Vatadi Doshas* causes *Paka* and *Vrana*.⁶

The treatment of Stomatitis predominantly includes pain relievers, corticosteroids, Vit. B complex etc. but Nature has accomplished human beings with immense medicinal plants to create a disease-free and

healthy life.⁷ The significance of oral hygiene was well-known in the early era. Where Acharya Charaka and Vagbhatta opined daily oral cavity care procedures under the heading 'Dinacharya' (Daily regimen) like Gandusha and Kawala.⁸ These procedures aid in promoting oral hygiene and ulcer healing. In case of Chronic Stomatitis especially those with a Pitta constitution or warm nature can benefit from Panchkarma procedure.i.e. Virechana and Rak-tamokshana.⁹ Maintenance of healthy oral hygiene is very climacteric in the prevention of oral cavity diseases. The World Health Organization has appraised that more than 80 % of the population in developing countries is primarily dependent on herbal medicine for basic healthcare needs.¹⁰

There are numerous formulations in classical text for the management of *Mukhapaka*. *Triphaladi Kwatha* is one among them which is comprised of six ingredients i.e. *Haritaki* (*Terminalia chebula* Retz.), *Bibhitaki* (*Terminalia bellerica* Roxb.), *Amalaki* (*Emblica officinalis* Gaertn.), *Jatipatra* (*Jasminum officinale* Linn.), *Patha* (*Cissampelos pareira* Linn.) & *Mridvika* (*Vitis vinifera* Linn.). These ingredients are essentially comprehensible for their antimicrobial activity.

DRUG REVIEW

The reference of *Triphaladi Kwatha* is illustrated in renowned texts i.e. Vrindamadhava (9th century) Chakradutta (11th century) & Bhaishajya Ratnawali (18th century) in *Mukharoga Chikitsa*. This *Kwatha* consists of six ingredients i.e. *Haritaki*, *Bibhitaki*, *Amalaki*, *Jatipatra*, *Patha* and *Mridvika*.

Table No 1: Drug review of Triphaladi Kwatha (Database of Medicinal Plants Volume2,3,5) ^{11, 12, 13}

Ingredients	Rasa	Guna	Virya	Vipaka	Karma	Part used
<i>Haritaki</i> (<i>Terminalia chebula</i> Retz.)	Madhura,Amla, Katu, Tikta, Kashaya	Laghu Ruksha	Ushna	Madhura	Vranaropana, Shothhara, Kaphaghna, Krimiroga	Fruit
<i>Bibhitaki</i> (<i>Terminalia bellerica</i> Roxb.)	Kashaya	Ruksha Laghu	Ushna	Madhura	Kaphaghna, Krimiroga	Fruit
<i>Amalaki</i> (<i>Emblca officinalis</i> Gaertn.)	Madhura, Amla,Katu, Tikta, Kashaya	Guru Ruksha, Sheeta	Sheeta	Madhura	Tridoshshamaka	Fruit
<i>Jatipatra</i> (<i>Jasminum officinale</i> Linn.)	Tikta, Kashaya	Laghu Snigdha Mridu	Ushna	Katu	Vranaropana, Mukharognashaka	Leaf
<i>Patha</i> (<i>Cissampelos pareira</i> Linn.)	Tikta	Laghu, Tikshna	Ushna	Katu	Vranaropana, Tridoshashamaka, Kaphaghna, Shothhara Dahaprashamana	Leaf
<i>Mridvika</i> (<i>Vitis vinifera</i> Linn.)	Madhura	Snigdha Guru Mridu	Sheeta	Madhura	Vatapittashamaka, Kaphanissarka, ,Kanthya ,Raktaprasadan	Fruit

Haritaki (*Terminalia chebula* Retz.)**Ayurvedic Pharmacological properties of Haritaki**

– It pacifies *Pitta Dosha* due to its *Madhura* (Sweet), *Tikta* (Bitter) & *Kashaya* (Astringent) *Rasa*, *Kapha Dosha* with the assistance of *Katu* (Pungent), *Tikta* (Bitter), *Kashaya* (Astringent) *Rasa* and *Vata dosha* due to its *Amla* (Sour) and *Madhura* (Sweet) *Rasa*. Here, *Haritaki* is *Chakchusya*, *Deepana*, *Hridya*, *Sarvadoshprashamana*, *Rasayana* & *Anulomana*,¹⁴⁻¹⁵

Pharmacological action of Haritaki –

1. Antioxidant activity – As *Haritaki* contains Glutathione and Catalase, both are the major endogenous antioxidants produced by cells in the body. Furthermore, it contains Superoxide dismutase which activates the endogenous system of antioxidant defences. Therefore, the extract of *Haritaki* has both antioxidant as well as immunomodulatory activities, capable of protecting cells from oxidative damage.¹⁶

2. Antiulcer and wound healing activity - Sharma *et.al.* has examined on the animals pretreated at 200

and 500 mg/kg body weight with hydroalcoholic extract of *Terminalia chebula* showed reduction in lesion index, total affected area and percentage of lesion in comparison with control groups in the aspirin, ethanol and cold restraint stress induced ulcer models.¹⁷

3. Anti- microbial activity – Sato *et al.* (1997) reported that a 50% ethanol extract of the fruiting bodies of *Terminalia chebula* Retz had antibacterial activity against multiresistant *Staphylococcus aureus*, with gallic acid and its ethyl ester being the active ingredients.¹⁸

4. Mucosal protection- Chebulinic acid may aid to strengthen the mucous membranes of the stomach and intestine. This protective layer helps to prevent stomach acid and other irritants from eroding the gastric mucosa. Chebulinic acid may aid ulcer healing by increasing mucosal protection and lowering the chance of ulcer recurrence.

Bibhitaki (*Terminalia bellerica* Roxb.)

The Ayurvedic Pharmacological properties of Bibhitaki – It alleviates *Pitta* and *Vata doshas* occur

concurrently as a result of *Kashaya* (Astringent) and *Madhura* (sweet) *Rasa* caused by *Ushna* (Hot) *Virya*. *Bibhitaki* is *Chakchusya*, *Keshya*, *Kaphapittajit*, *Bhedaka*, *Kriminashana* & *Kasahara*.¹⁹⁻²⁰

Pharmacological action of *Bibhitaki* –

Antimicrobial activity- The presence of tannins in *Terminalia bellerica* fruit extracts could prevent the development of microorganisms by precipitating microproteins and making them unavailable for their nutrition. Alkaloid present in fruit extracts could inhibit microorganisms by inhibiting enzymes involved in energy production, interfering in the integrity of the cell membrane and the synthesis of structural components.²¹

Antifungal activity - The growth of the fungus might have been inhibited due to the presence of phenol which might have induced the swelling, plasma seeping and leakage, distortion, abnormal branching or fusion and wrinkling of hyphae.

Anti-inflammatory activity- *Terminalia bellerica* extracts have been proved in studies to suppress a variety of inflammatory mediators, including cytokines and enzymes involved in the inflammation process. These mediators have substantial roles in inflammation and immunological responses. *Terminalia bellerica* extract has been reported to modify inflammatory pathways in the body, which might include inhibiting the nuclear factor kappa, which is a crucial factor of inflammation.²²

***Amalaki* (*Embllica officinale* Gaertn.)**

The Ayurvedic Pharmacological properties of *Amalaki* – It is *Tridosahara*, but primarily *Pittashamaka*. It relieves the *vata dosha* with its sour *rasa*, whereas *Pitta* has been at ease by its sweet and astringent *rasa*. According to API, the *karmas* of *Amalaki* include *Chakchusya*, *Rasayana*, *Tridoshajit*, and *Vrisya*.²³⁻²⁴

Pharmacological action of *Amalaki*-

Antioxidant activity- The recycling of sugar moieties and the conversion of polyphenols into medium and high molecular weight tannins are what cause antioxidant action. Ellagic acid, a powerful antioxidant found in amla, can suppress gene mutations and repair chromosomal abnormalities. Amla contains

significant levels of vitamin C as well as other antioxidants such as polyphenols and flavonoids. These compounds act to scavenge free radicals and mitigate oxidative stress, both of which have been associated with ulcer development. Amla may help prevent ulcers by reducing oxidative damage to the stomach mucosa.

Anti-inflammatory activity- Chronic inflammation is associated with the development of gastric ulcers. Amla exhibits anti-inflammatory properties that may help to reduce inflammation in the stomach lining, thereby preventing ulcer formation or promoting ulcer healing.²⁵

***Patha* (*Cissampelos pareira* Linn.)**

The Ayurvedic Pharmacological properties of *Patha* - *Patha* is *Tridoshashamaka*, but it is primarily *Kaphapittashamaka*. According to API, *Patha's karma* includes *Bhagnasandhanakaraka*, *Grahi*, *Raktashodhaka*, *Vishaghna*, *Tridoshashamana*, and *Stan-yashodhana*.^{26,27}

Pharmacological action of *Patha* –

Ulcer protective activity- According to Amresh et al., an ethanolic extract of the leaves demonstrated a dose-dependent ulcer-protective action in a variety of acute and chronic ulcers. *Cissampelos pareira* considerably increased defense components such as total hexose and sialic acid while substantially decreasing the ulcer index in the lipid peroxidase product malondialdehyde in ethanol induced ulcers.²⁸

***Jatipatra* (*Jasminum officinale* Linn.)**

Ayurvedic Pharmacological properties of *Jatipatra* – In *rasa*, *Jati* is *Tikta* (bitter) and *Kashaya* (astringent). In *Guna*, there are *Laghu* (Light), *Snigdha* (Smooth), and *Mridu* (Soft). *Vipaka* has *Katu*, while *Virya* has *Ushna* (Hot). According to the API, the *karmas* are *Sirovirechana* and *Chakchusya*.^{29,30}

Pharmacological action of *Jatipatra*– It is antibacterial and anti-inflammatory. Methanolic extract (organic fraction) of whole plant showed significant antibacterial activity against different pathogenic species of G+ve bacteria, i.e., *Bacillus pumilus*, *Staphylococcus aureus* and *Streptococcus pneumoniae*_etc. Some studies revealed the presence of outstanding antimicrobial activity against pathogenic microbes,

which may be used to control the infectious diseases.³¹⁻³²

Mridvika (*Vitis vinifera* Linn.) Ayurvedic pharmacological properties of Mridvika - It appease Vata Dosha due to Snigdha (Smooth), Guru (Heavy), Mridu (Soft), Madhura (Sweet), Pitta Dosha due to Madhura (Sweet) rasa and Sheeta (cold) veerya. Mridvika is Medhya, Trishna Nighrahana, Snehana, Anulomana, Raktaprasadaka, Raktpitta Shamaka, Balya, Mutrala, Sandhankaraka.³³⁻³⁴ **Pharmacological action of Mridvika** - Polyphenols are the most important phytochemicals in grapes that possess many biological activities and health promoting benefits. The phenolic compounds mainly include anthocyanins, flavonoids, and phenolic acids. These polyphenols have demonstrated potential antibacterial, antifungal, and antiviral activities. Phenolic compounds in grapes such as resveratrol displayed potent antifungal activity against human pathogenic fungi *Candida albicans*. The antimicrobial activity of *Vitis vinifera* is due to the presence of alkaloid and flavonoid.³⁵⁻³⁶

DISCUSSION

In the current materialistic lifestyle, excessive intake of fast foods, beverages, spicy foods, more acidic foods, addictions of chewing betel nut, gutka, tobacco, smoking, drinking alcohol, and excessive intake of tea, etc. are distinguished as unwholesome in Ayurveda. It disrupts the normal physiology of the body and manifests various oral diseases.³⁷ Stomatitis is a relatively common condition, affecting up to 25% of the worldwide population. It may develop as an individual entity or as part of a systemic condition. Out of the 3 subtypes, minor aphthous ulcers are the most prevalent (>70% of cases), whereas major (10%) and herpetiform (10%) types are less common.³⁸ The symptoms begin with a burning feeling (pre-aesthesia) and progress to pre-ulcerative stage, where lymphocytes infiltrate the epithelium. The following step is the ulcerative stage, in which Edema leads to keratinocyte localization and vasculitis, resulting in inflammation, ulceration, and the presence of plasma cells, lymphocytes and neutrophils. T lym-

phocytes, macrophages, and mast cells release tumor necrosis factor-alpha (TNF- α) during the final stage of RAS, which involves healing. The current treatment for Stomatitis focuses on re-epithelializing ulcers and lowering mucosal surface inflammation and lessen the pain.³⁹

Triphaladi Kwatha is one of the formulations to treat Stomatitis. Triphala possess phytochemicals that promote the growth of beneficial gut microbes such as Bifidobacteria and Lactobacillus species while inhibiting the growth of less desirable and potentially more inflammatory gut residents such as *Escherichia coli*. Triphala derived polyphenols such as chebulinic acid are also transformed by the human gut microbiota into metabolites such as urolithins, which have the potential to prevent oxidative damage and inflammation.⁴⁰

Local defense mechanism increases due to the lysozyme (a bacteriostatic enzyme) present in the saliva. Jatipatra show antifungal effect, where n-butanol fraction showed more activity than the standard drug with zone of inhibition of 20.9 ± 1.2 mm for *Candida albicans* and almost equal to the effect of the standard drug against *Aspergillus niger* with zone of inhibition of 18.2 ± 1.1 mm. *Tikta* and *Kashaya rasa* of the *Jatipatra do daha kandu prashmana*, *Vranaropana* and *Sandhana* respectively. *Mrudu guna* of the *jatipatra* causes *pitta shamana* as it has *jala* and *akash mahabhuta* dominance. All this causes *shamana of pitta dosha* and healing of mouth ulcers.⁴¹

CONCLUSION

In the contemporary era, synthetic drugs are accompanied by their side effects, while herbal drugs are far away from reality described above. *Triphaladi Kwatha* is one of the Ayurvedic formulations indicated for *Mukhapaka*. Evaluating the components reveals that all of the medications in *Triphaladi Kwatha* have antibacterial, antifungal, antioxidant and antiulcer properties. Their anti-microbial action is significantly worthwhile in the management of various pathogens causing Stomatitis furthermore facilitates speeding up the treatment process. Here maximum anti-microbial activity has been found in ethanolic and methanolic

extracts of most of the herbal drugs used in *Triphaladi Kwatha*. Thus, due to its anti-microbial effect, *Triphaladi Kwatha* can be practiced popularly for the alleviation of Stomatitis.

REFERENCES

1. Rathi B, Rathi R. Pharmaceutico-analytical standardization of Triphala Mouthwash. *Journal of Indian System of Medicine*. 2017 Jan 1;5(1):30-5.
2. Kaur R, Behl AB, Punia RS, Nirav K, Singh KB, Kaur S. Assessment of prevalence of recurrent aphthous stomatitis in the North Indian population: A cross-sectional study. *Journal of Pharmacy and Bioallied Sciences*. 2021 Jun 1;13(Suppl 1): S363-6.
3. Manoj MA, Jain A, Madtha SA, Cherian TM. Prevalence and risk factors of recurrent aphthous stomatitis among college students at Mangalore, India. *PeerJ*. 2023 May 15; 1 : e14998.
4. <https://en.wikipedia.org/wiki/Stomatitis#References>
5. Smriti Kaul, Anil Verma, Jyoti Gupta, Narender Chanchal. *Comprehensive Study of Mukhapaka and its Modern Counterpart*. AYUSHDHARA, 2023;10(Suppl 3):83-87.
6. Ghaywate RB, Ghuge PM, Suryavanshi RS, Lanje S. Ayurveda Management of Pittaj Mukhapak (Aphthous ulcer): A Case Study. *Journal of Ayurvedic and Herbal Medicine*. 2020;6(4):210-2.
7. C.A. Raju, S. Shamshad Begum, B. Kalpana, A. Sathish, *Processing and Nutritional Evaluation of Am-la (Phyllanthus emblica) Pomace*, 10.18805/ajdfr. DR-2068
8. Usha Sharma et al. A review on laghukhadira vatika: An Ayurvedic formulation for oral diseases. *Int. J. Res. Ayurveda Pharm*. 2022;13(4):105-110 <http://dx.doi.org/10.7897/2277-4343.130498>
9. www.kalpataru-ayurved.com was first indexed by Google in February 2014.
10. <https://www.who.int/news/item/25-03-2022-who-establishes-the-global-centre-for-traditional-medicine-in-india>
11. Sharma P.C, Yelne M.B, Dennis T.J., *Database on Medicinal Plants Used in Ayurveda*, Edition- 2005, Documentation and Publication Division CCRAS, New Delhi Volume -3, Page No.-11,158,282,332.
12. Sharma P.C, Yelne M.B, Dennis T.J, *Database on Medicinal Plants Used in Ayurveda*, Edition- 2005, Documentation and Publication Division CCRAS, New Delhi, Volume -2, Page No. 438.
13. Sharma P.C, Yelne M.B, Dennis T.J, *Database on Medicinal Plants Used in Ayurveda*, Edition- 2005, Documentation and Publication Division CCRAS, New Delhi, Volume -5, Page No.43.
14. *The Ayurvedic pharmacopoeia of India Part 1*, Vol 1, Delhi; the controller of publications, second edition, p-63.
15. Acharya Priyavrata Sharma, *Dravyaguna Vigyan*, Vol. 2 Chaukhamba Bharati Academy, Varanasi, p-753 - 756.
16. Aher V, Wahi A. Immunomodulatory Activity of Alcohol Extract of *Terminalia chebula* Retz Combretaceae. *Tropical Journal of Pharmaceutical Research* [Internet]. 2011 Nov 7;10(5). Available from: <https://doi.org/10.4314/tjpr.v10i5.5>
17. Sharma P, Prakash T, Kotresha D, Ansari MA, Sahrm UR, Kumar B, Debnath J, Goli D. Antiulcerogenic activity of *Terminalia chebula* fruit in experimentally induced ulcer in rats. *Pharm Biol*. 2011 Mar;49(3):262-8. doi: 10.3109/13880209.2010.503709. PMID: 21323478.
18. Sharma P, Prakash T, Kotresha D, Ansari MA, Sahrm UR, Kumar B, Debnath J, Goli D. Antiulcerogenic activity of *Terminalia chebula* fruit in experimentally induced ulcer in rats. *Pharm Biol*. 2011 Mar;49(3):262-8. doi: 10.3109/13880209.2010.503709. PMID: 21323478.
19. *The Ayurvedic pharmacopoeia of India Part 1*, Vol 1, Delhi; the controller of publications, second edition, p-34.
20. Acharya Priyavrata Sharma, *Dravyaguna Vigyan*, Vol. 2 Chaukhamba Bharati Academy, Varanasi, p-239-240.
21. Khameneh B, Eskin NAM, Iranshahy M, Fazly Bazzaz BS. Phytochemicals: A Promising Weapon in the Arsenal against Antibiotic-Resistant Bacteria. *Antibiotics (Basel)*. 2021 Aug 26;10(9):1044. doi: 10.3390/antibiotics10091044. PMID: 34572626; PMCID: PMC8472480.
22. Li YY, Cui Y, Dong WR, Liu TT, Zhou G, Chen YX. *Terminalia bellirica* Fruit Extract Alleviates DSS-Induced Ulcerative Colitis by Regulating Gut Microbiota, Inflammatory Mediators, and Cytokines. *Molecules*. 2023 Jul 31;28(15):5783. doi: 10.3390/molecules28155783. PMID: 37570753; PMCID: PMC10421151.
23. *The Ayurvedic pharmacopoeia of India Part 1*, Vol 1, Delhi; the controller of publications, second edition, p-7-8.

24. . Acharya Priyavrata Sharma, Dravyaguna Vigyan, Vol. 2 Chaukhamba Bharati Academy, Varanasi, p-758-760.
25. https://www.researchgate.net/publication/11061088_Gastroprotective_effects_of_'Amla'_Emblica_officinalis_on_in_vivo_test_models_in_rats
26. The Ayurvedic pharmacopoeia of India Part 1, Vol 1, Delhi; the controller of publications, second edition, p-122-123.
27. Acharya Priyavrata Sharma, Dravyaguna Vigyan, Vol. 2 Chaukhamba Bharati Academy, Varanasi, p-626-628
28. Amresh G, Zeashan H, Gupta RJ, Kant R, Rao CV, Singh PN. Gastroprotective effects of ethanolic extract from *Cissampelos pareira* in experimental animals. *Journal of natural medicines*. 2007 Jul; 61:323-8.
29. The Ayurvedic pharmacopoeia of India Part 1, Vol 3, Delhi; the controller of publications, second edition, p-111-113
30. Acharya Priyavrata Sharma, Dravyaguna Vigyan, Vol. 2 Chaukhamba Bharati Academy, Varanasi, p-178-180
31. Sharma P.C, Yelne M.B, Dennis T.J., Database on Medicinal Plants Used in Ayurveda, Edition- 2005, Documentation and Publication Division CCRAS, New Delhi, Volume-3, Page No. – 332
32. . Hussain M, Bakhsh H, Aziz A, Majeed A, Khan IA, Mujeeb A, Farooq U. Comparative In vitro study of antimicrobial activities of flower and whole plant of *Jasminum officinale* against some human pathogenic microbes. *Journal of Pharmacy and Alternative Medicine*. 2013;2(4):33-43.
33. The Ayurvedic pharmacopoeia of India Part 1, Vol 3, Delhi; the controller of publications, second edition, p-75-77
34. Acharya Priyavrata Sharma, Dravyaguna Vigyan, Vol. 2 Chaukhamba Bharati Academy, Varanasi, p-133-135
35. Sharma P.C, Yelne M.B, Dennis T.J., Database on Medicinal Plants Used in Ayurveda, Edition- 2005, Documentation and Publication Division CCRAS, New Delhi, Volume-5, Page Number-43
36. Ahmed et. al. In_vitro_Antibacterial_Activity_of_Vitis_vinifera_Leaf_Extracts_against_some_Pathogenic_Bacterial_Strains
37. R.D. Deshmukh et. al., A clinical case study- role of triphala churna pratisarana and khadiradi vati in the management of mukhapaka with special reference to stomatitis.
38. Edgar, N. R., Saleh, D., & Miller, R. A. (2017). Recurrent Aphthous Stomatitis: A Review. *The Journal of clinical and aesthetic dermatology*, 10(3), 26–36.
39. Suharyani, I., Fouad Abdelwahab Mohammed, A., Muchtaridi, M., Wathoni, N., & Abdassah, M. (2021). Evolution of Drug Delivery Systems for Recurrent Aphthous Stomatitis. *Drug Design, Development and Therapy*, 15, 4071–4089. <https://doi.org/10.2147/DDDT.S328371>.
40. Peterson, C. T., Denniston, K., & Chopra, D. (2017). Therapeutic Uses of Triphala in Ayurvedic Medicine. *Journal of alternative and complementary medicine (New York, N.Y.)*, 23(8), 607–614. <https://doi.org/10.1089/acm.2017.0083>
41. Barde Rashmi, a clinical case study- role of jatipatra kwath gandusha in the management of mukhapaka with special reference to stomatitis, Government Ayurvedic College and Hospital Raje Raghuji Nagar Sakkardara Chauk Nagpur, Maharashtra, India, S485, DOI: 10.20959/wjpr20204-17199.

Source of Support: Nil

Conflict of Interest: None Declared

How to cite this URL: Divya Thapliyal et al: A pharmacological review on triphaladi kwatha – an ayurve-dic formulation for stomatitis. *International Ayurvedic Medical Journal* {online} 2024 {cited June 2024} Available from: http://www.iamj.in/posts/images/upload/1085_1091.pdf