ISSN 2456-3110
Vol 9 · Issue 4
April 2024

JAiMS
INTERNATIONAL

Journal of Ayurveda and Integrated Medical Sciences

www.jaims.in

JAIMS

An International Journal for Researches in Ayurveda and Allied Sciences

Maharshi Charaka
Ayurveda

Indexed

Journal of
Ayurveda and Integrated Medical Sciences
ISSN 2456-3110
REVIEW ARTICLE April 2024

Therapeutic effect of an Ayurvedic drug in the management of Respiratory Allergic Disorders in children - A comprehensive review

Archit Kumar[1], Brahm Dutt Sharma[2], Nisha Ojha[3]

[1]*Post Graduate Scholar 2nd Year, Department of Kaumarbhritya, National Institute of Ayurveda, Deemed to be University (De-Novo), Jaipur, Rajasthan, India.*

[2]*Assistant Professor, Department of Kaumarbhritya, National Institute of Ayurveda, Deemed to be University (De novo), Jaipur, Rajasthan, India.*

[3]*Professor & HOD, Dean (Fellowships and Post-Doctoral Studies), Department of Kaumarbhritya, National Institute of Ayurveda, Deemed to be University (De-Novo), Jaipur, Rajasthan, India.*

ABSTRACT

Background: Respiratory allergic disorders (RAD) are the most common allergy symptom seen in children. Respiratory allergies are primarily caused by hyper responsiveness of the respiratory mucosa, which results in histamine release and mast cell activation. In *Ayurvedic* words, this could be viewed as an abnormality of the body's immune system or *Ojus* induced by disrupted *Vata, Kapha,* and *Pitta.* The prevalence of respiratory allergies in school-aged children in India varies widely, ranging from 5-20%. **Methods:** This study was completed by gathering the knowledge from classical *Ayurvedic* literature, research articles, guidelines and PubMed and MedLine databases. **Results and Discussion:** *Dashmoola Katutrayadi* drug is mentioned in *Sahastra Yogam* under *Swasa Kasahara Kashaya* have *Shwas-Kasahar*, anti-inflammatory, anti-histaminic and anti-asthmatic effects individually and in combinations. **Conclusion:** Present review reveals that these drugs have potential to alleviate the severity and frequency of RAD and can be used for the management of the same.

Key words: *Dashmoola Katutrayadi Kashaya, Respiratory allergic disorders (RAD), Anti-histaminic, Anti-asthamatic, Shwasa-Kasahar, Immunomodulator.*

INTRODUCTION

The term "allergy" is used to describe an excessive reaction to substances in the environment that are typically harmless to most people. However, in individuals with a predisposition, exposure to these substances triggers an immune response leading to various signs and symptoms. Respiratory allergies are characterized by the rapid onset of acute respiratory symptoms due to an exaggerated immune system response to allergens. Allergies can also manifest as hypersensitivity to specific triggers such as foods, environmental irritants, medications, specific weather conditions, and more. When exposed to these compounds, which act as antigens, the body responds by releasing histamine and other chemicals.

Both allergic rhinitis and allergic *Asthma* fall under the category of respiratory allergies. The prevalence of allergic rhinitis and allergic *Asthma* is significant, leading to substantial direct and indirect costs. Allergic rhinitis, which includes symptoms like nasal congestion, watery nasal discharge, itchy nose, and sneezing, represents an immunological reaction of the nasal mucosa to airborne allergens. The manifestations of allergic rhinitis can be associated with conditions such as fatigue, headaches, cognitive decline, and sleep

Address for correspondence:
Dr. Archit Kumar
Post Graduate Scholar 2nd Year, Department of Kaumarbhritya, National Institute of Ayurveda, Deemed to be University (De-Novo), Jaipur, Rajasthan, India.
E-mail: architbhartiya1997@gmail.com
Submission Date: 11/02/2024 Accepted Date: 19/03/2024

Access this article online
Quick Response Code
Website: www.jaims.in
DOI: 10.21760/jaims.9.4.27

ISSN: 2456-3110 REVIEW ARTICLE April 2024

disturbances, significantly impacting a patient's quality of life.

Modern medicine employs various medications like antibiotics, antipyretics, anti-inflammatory drugs, antihistamines, bronchodilators, mast cell stabilizers, decongestants, and corticosteroids to treat respiratory allergies. However, these medications often come with adverse side effects and do not provide long-lasting relief. According to *Ayurveda*, respiratory allergies result from immunological dysfunction due to the production of *"Ama"* and *"Kapha Dosha,"* which are undigested intermediate products. *Ayurveda* offers potent remedies with immunomodulatory, anti-allergic, anti-inflammatory, and mucolytic effects that can address respiratory allergies at multiple levels, offering immediate symptomatic relief to patients.

Dashmoola Katutrayadi drug is mentioned in *Sahastra Yogam* under *Swasa Kasahara Kashaya* and in The *Ayurvedic* Formulary of India part 1.

The phase 3 International Study of Asthma and Allergy in Children (ISAAC)[1] reported an overall prevalence of current wheeze of 7% in Indian children aged 6–7 years and aged 13–14 years, with a higher prevalence of up to 10–20% in some areas.[2]

There is an urgent need for a drug that improves the respiratory system while not disrupting the body's and mind's normal homeostasis and totally heals the condition. Keeping this in mind, herbal drugs are assessed for their capacity to treat respiratory allergies. Children can receive this *Ayurveda* treatment without risk, and they can also replace the current anti-allergy drugs.

Table 1: Showing drugs of *Dashmoola Katutrayadi* drugs

Drug	Botanical Name	Family	Part Used
Bilva	*Aegle marmelos* Corr.	*Rutaceae*	Root, Stem Bark
Shyonaka	*Oroxylum indicum* Vent.	*Bignoniaceae*	Root, Stem Bark
Gambhari	*Gmelina arborea* Roxb.	*Verbenaceae*	Root, Stem Bark
Patala	*Stereospermum suaveolens* Dc.	*Bignoniaceae*	Root, Stem Bark
Agnimantha	*Premna integrifolia* Linn.	*Verbenaceae*	Root, Stem Bark
Shalaparni	*Desmodium gangeticum* Dc.	*Fabaceae*	Whole Plant
Prashniparni	*Ureria picta* Desv.	*Fabaceae*	Whole Plant
Brahati	*Solanum indicum* Linn.	*Solanaceae*	Whole Plant
Kantakari	*Solanum surattense* Brum.F.	*Solanaceae*	Whole Plant
Gokshura	*Tribulus terrestris* Linn.	*Zygophyllaceae*	Whole Plant
Maricha	*Piper nigrum* Linn.	*Piperaceae*	Fully Mature Dried Fruit
Shunthi	*Zingiber officinale* Roscoe	*Zingiberaceae*	Rhizome
Pippali	*Piper longum* Linn.	*Piperaceae*	Fruit
Vasa	*Adhatoda vasica* Linn.	*Acanthaceae*	Root

RESULT

1. *Bilva* (*Aegle marmelos*)

Ayurvedic Pharmacological Properties

Bilva (*Aegle marmelos*) possesses *Kashaya Tikta, Rasa*, *Laghu Ruksha Guna*, *Ushna Veerya, Katu Vipaka* and *Kapha-Vata Shamaka* property along *with Shothhara* (anti-inflammatory), *Vednasthapan* (analgesic), *Kaphaghana (Kapha* alleviation), *Deepana* (digestive stimulant), *Pachana* (digest *Ama*), *Grahi* (anti diarrheal) *Karma.*[3]

Pharmacology

Bilva crude extracts are widely reported to have antiasthmatic properties.[4] The presence of the alkaloid aegeline in the leaves has been shown to be a successful treatment for asthma. Meanwhile, the ethanolic extract derived from the stem bark

ISSN: 2456-3110 REVIEW ARTICLE April 2024

demonstrates antiproliferative effects in vitro on human tumor cell lines, while the methanolic extract from the same stem bark exhibits in vitro antiviral activity against human Coxsackie virus B1-B2.[5]

In South India, it is a common practice to administer leaf juice for treating respiratory spasms and wheezing.

2. *Shyonaka* (*Oroxylum indicum*)

Ayurvedic Pharmacological Properties

Shyonaka (Oroxylum indicum) possesses *Madhur, Tikta, Kashaya Rasa, Sheet Ruksha Guna, Ushna Veerya, Katu Vipaka* and *Kapha-Vata Shamaka* property along with *Shothhara* (anti-inflammatory), *Vednasthapan* (analgesic), *Deepana* (digestive stimulant), *Pachana* (digest *Ama*), *Rochana* (stimulate appetite), *Kaphaghana (Kapha* alleviation), *Amhara* (vitiation of poorly digested food) *Karma.*[6]

Pharmacology

The root possesses properties such as sweetness, astringency, bitterness, anti-inflammatory and expectorant effects. It can be beneficial in addressing various conditions, including inflammations, leprosy, dropsy, sprains, neuralgia, hiccups, cough, asthma, bronchitis, anorexia, and nasal disorders. On the other hand, tender fruits exhibit expectorant, carminative, and stomachic qualities and can provide relief for conditions such as cough, bronchitis, dyspepsia, flatulence, colic, and leucoderma.[7]

It may also be used to treat Sars-Cov-2 (Covid-19) infection in humans. Antioxidant, anti-inflammatory, anticancer, antimicrobial, anti-arthritic, and other functional properties have been reported in studies.[8]

3. *Gambhari (Gmelina arborea)*

Ayurvedic Pharmacological Properties

Gambhari (Gmelina arborea) possesses *Tikta Kashaya* and *Madhur Rasa*, *Guru Guna*, *Ushna Veerya, Katu Vipaka* and *Vata Doshahara* property along with *Vednasthapana* (analgesic), *Balya* (strengthen), *Sandhaniya* (healing), *Deepana* (digestive stimulant), *Anulomna* (carminative), *Shothhara* (anti-inflammatory) *Karma*.[9]

Pharmacology

Research shows that the methanolic extract and ethyl-acetate fraction of *Gmelina arborea* can elevate the total white blood cell count, which had been reduced by the cytotoxic drug cyclophosphamide. Furthermore, it has the capacity to normalize neutrophil and lymphocyte levels. These study results indicate that the experimental drug can promote bone marrow activity and may offer assistance in cancer treatment by mitigating the toxicity induced by cyclophosphamide.[10] Due to premnazole, it has anti-inflammatory properties.[11]

4. *Patala* (*Stereospermum suaveolens*)

Ayurvedic Pharmacological Properties

Patala (Stereospermum suaveolens) possesses *Tikta Kashaya Rasa*, *Laghu Ruksha Guna*, *Ushana Veerya, Katu Vipaka* and *Vatapittakapha Doshahara* property along with *Vednasthapan* (analgesic), *Kaphaghana (Kapha* alleviation), *Hikkanigrhana* (anti hiccups), *Grahi* (anti diarrheal), *Shothhara* (anti-inflammatory) *Karma.*[12]

Pharmacology

Bark is used to treat inflammatory diseases.[13]

5. *Agnimanth* (*Premna integrifolia*)

Ayurvedic Pharmacological Properties

Agnimanth (Premna integrifolia) possesses *Madhur Tikta, Rasa*, *Laghu Ruksha Guna*, *Ushna Veerya, Katu Vipaka* and *Kapha-Vata Shamaka* property along with *Vednasthapan* (analgesic), *Kaphaghana (Kapha* alleviation), *Deepana* (digestive stimulant), *Pachana* (digest *Ama*), *Anuloman* (carminative), *Shothhara* (anti-inflammatory) *Karma*.[14]

Pharmacology: There is a significant anti-inflammatory effect.[15] Anti-inflammatory activity of methanolic extract of *Premna integrifolia* bark has been marked.[16]

6. *Shalparni* (*Desmodium gangeticum*)

Ayurvedic Pharmacological Properties

Shalparni (*Desmodium gangeticum*) possesses *Madhur Tikta Rasa*, *Guru Snigdha Guna*, *Ushana Veerya, Madhur Vipaka* and *Vatapittakapha Doshahara*

ISSN: 2456-3110 REVIEW ARTICLE April 2024

property along with *Deepana* (digestive stimulant), *Anuloman* (carminative), *Shothhara* (anti-inflammatory), *Angamarda Prashaman* (analgesic) *Karma*.[17]

Pharmacology

The root of *Desmodium gangeticum* is utilized as an astringent and diuretic in the treatment of chronic fever, coughs, diarrhoea, asthma, snake bites, and scorpion stings. Additionally, the anti-inflammatory and analgesic properties of gangetin have been established.[18] Water decoction of the *Desmodium gangeticum* has Anti-inflammatory and anti-nociceptive activity.[19]

7. *Prishanparni* (*Ureria picta*)

Ayurvedic Pharmacological Properties

Prishanparni (*Ureria picta*) possesses *Madhur Tikta Rasa*, *Laghu Guna*, *Ushana Veerya, Madhur Vipaka* and *Vatapittakapha Doshahara* property along with *Deepan* (digestive stimulant), *Anuloman* (carminative), *Shothhara* (anti-inflammatory), *Kaphanisarak (Kapha* alleviation), *Angamarda prashaman* (analgesic) *Karma*.[20]

Pharmacology

The preparation of a decoction from the plant is recommended for the management of chills, fever, and cough.[21] *Ureria picta* have significant anti-inflammatory activity.[22]

8. *Brahati* (*Solanum indicum*)

Ayurvedic Pharmacological Properties

Brahati (*Solanum indicum*) possesses *Katu* and *Tikta Rasa*, *Laghu Ruksha* and *Tikshana Guna*, *Ushna Veerya, Katu Vipaka* and also *Kaphavatashamaka* property along with *Deepana* (digestive stimulant), *Pachana* (digest *Ama*), *Grahi* (anti diarrheal), *Vednasthapan* (analgesic), *Swashara* (anti asthmatic), *Kashahara* (anti tussive) *Karma.*[23]

Pharmacology

The whole plant including its roots is employed for its carminative and expectorant properties. These attributes are beneficial in addressing conditions such as asthma, cough, chronic fever and flatulence.[24]

9. *Kantkari* (*Solanum surattense*)

Ayurvedic Pharmacological Properties

Kantakari (*Solanum surattense*) possesses *Tikta, Katu* Rasa, *Laghu, Ruksha, Sara Guna*, *Ushna Veerya, Katu Vipaka* and *Kaphavata Doshahara* property along with *Deepan* (digestive stimulant), *Pachan* (digest *Ama*), *Rechana* (strong purgative), *Vednasthapan* (analgesic), *Swashara* (anti asthmatic), *Kanthya* (demulcent), *Hikkanigrahana* (anti hiccups), *Kashahara* (anti tussive) *Karma*.[25]

Pharmacology

The extract's glycoalkaloid and fatty acid components lead to the release of histamines from bronchial lung tissues when it is chopped. It is suggested that the vanishing of histamines from the lung tissue may underlie the drug's positive impact on bronchial asthma.[26]

Solanum xanthocarpum has shown significant improvements in pulmonary function among patients with varying degrees of asthma severity. It is suggested that the relief from bronchial asthma symptoms associated with *Solanum xanthocarpum* Schrad and Wendl may be attributed to its bronchodilatory effect, reduction in bronchial mucosal swelling, and decreased airway lumen secretions.[27,28]

Glycoalkaloid and fatty acid fraction of *Solanum xanthocarpum* extract can lead to histamine release from chopped lung tissue. The drug's effect on bronchial asthma may be due to histamine decrement in the bronchial tissues. Because of the inorganic nitrate content, the expectorant action occurs.[29]

10. *Gokshura* (*Tribulus terrestris*)

Ayurvedic Pharmacological Properties

Gokshura (*Tribulus terrestris*) possesses *Madhur Rasa*, *Guru Snigdha Guna*, *Sheet Veerya, Madhur Vipaka* and *Vatapitta Doshahara* property along with *Vednasthapaka* (analgesic), *Anuloman* (carminative), *Kaphanisarak (Kapha* alleviation), *Shothhara* (anti-inflammatory), *Mutravirechniya* (diuretic) *Karma*.[30]

Pharmacology

The fruits of the plant's saponins showed a dose dependent rise in phagocytosis, indicates the

ISSN: 2456-3110 REVIEW ARTICLE April 2024

stimulation of an unspecific immune response. Alcoholic extract of the entire plant shows a significant increase in humoral antibody type and delayed type hypersensitivity response indicating increased value of specific immune response.[31] The ethanolic extract inhibited cyclo-oxygenase 2 (cox2) and inducible nitric oxide synthase (inos) expressions in lipo polysaccharide stimulated raw 264.7 cells. It also inhibited the expression of pro-inflammatory cytokines like tumour necrosis factor alpha and interleukin 4 in macrophage cell lines. Thus, the ethanolic extract inhibits inflammatory mediator's expression and inflammatory cytokine expression which has a good effect on inflammatory conditions.[32]

11. *Shunthi* (*Zingiber officinale*)

Ayurvedic Pharmacological Properties

Shunthi (*Zingiber officinale*) possesses *Katu Rasa*, *Laghu Snigdha Guna*, *Ushana Veerya, Madhur Vipaka* and *Kaphavata Doshahara* property along with *Shothhara* (anti-inflammatory), *Vedrnasthapak* (analgesic), *Deepana* (digestive stimulant), *Pachana* (digest *Ama*), *Anulomana* (carminative), *Shoolaprashaman* (analgesic), *Swashara* (anti asthmatic), *Triptighana* (sense of satisfaction) *Karma*.[33]

Pharmacology

Shunthi acts as an expectorant and possesses mild anti-inflammatory characteristics. Ginger's health-enhancing attributes are attributed to its rich composition of volatile and nonvolatile substances, including Sesquiterpene and Monoterpenoid Hydrocarbons that impart ginger's unique aroma and flavor. Nonvolatile pungent compounds like Gingorols, Shogaols, Paradols and Zingerone are also present in ginger contributing to its anti-inflammatory, antioxidant and antimicrobial properties. *Shunthi* additionally shows a role in preventing the formation of intermediate products such as lactic acid, uric acid and ketones, which can be used in the treatment of infectious diseases. These properties extend beyond respiratory diseases and have potential benefits in various conditions like heart disease, neurodegenerative diseases, and cancer. Gingerol and related compounds within ginger exert their effects by inhibiting the biosynthesis of prostaglandins and leukotrienes through the inhibition of enzymes like 5 Lipoxygenase and prostaglandin synthetase. Moreover, they can also inhibit the production of pro-inflammatory cytokines like Il-1, TNF-A, and Il-8.[34,35] *Zingiber officinalis* Is Non-Steroidal Anti inflammatory Drug.[36] Some free radicals generated during the oxidation process are required in biological systems for energy production. Ginger's anti-oxidative properties undoubtedly protect humans from a variety of chronic diseases. 6-Shagaol has the potent anti-oxidant and anti-inflammatory properties in ginger, which can be showed to the presence of alpha and beta unsaturated ketone moiety.[37]

12. *Maricha* (*Piper nigrum*)

Ayurvedic Pharmacological Properties

Maricha (*Piper nigrum*) possesses *Katu Rasa*, *Laghu Teekshana Guna*, *Ushana Veerya, Katu Vipaka* and *Kaphavata Doshahara* property along with *Lekhana* (anti-obesity), *Vatanuloman* (easy passage to *Vata), Kapahanisaraka (Kapha* alleviation), *Pachan* (digest *Ama*), *Deepana* (digestive stimulant) *Karma*.[38]

Pharmacology

Maricha is a popular spice that has antioxidant and anti-inflammatory properties. it also helps with cholesterol, blood sugar control, and brain and gut health.[39] Piperine demonstrated the ability to inhibit free radicals and reactive oxygen species when tested in vitro, suggesting potential antioxidative properties. Additionally, researchers investigated piperine's anti-inflammatory, analgesic and anti-arthritic characteristics. They assessed the anti-inflammatory effects on fibroblast-like synoviocytes obtained from rheumatoid arthritis patients stimulated with Interleukin 1 in vitro.[40]

13. *Pippali* (*Piper longum*)

Ayurvedic Pharmacological Properties

Pippali (Piper longum) possesses *Katu* Rasa, *Laghu Teekshana Snigdha Guna*, *Anushana Sheet Veerya, Madhur Vipaka* and *Vata Doshahara* property along

ISSN: 2456-3110 REVIEW ARTICLE April 2024

with *Deepana* (digestive stimulant), *Triptighana* (sense of satisfaction), *Vatanuloman* (easy passage to *Vata*), *Shoolaprashamana* (analgesic), *Hikkanigrhana* (anti hiccups), *Swashara* (anti asthmatic), *Kasahara* (anti tussive) *Karma*.[41]

Pharmacology

Cough, cold, *Asthma*, hoarseness, and hiccup relief are provided by powered long pepper and honey.[42] *Piper Nigrum* contains argenine. The most abundant enzymes in piper nigrum are glucose 6-phosphate dehydrogenase and glutathione peroxidase.

Testing conducted on mice using parameters like Haemagglutination Titre, Macrophage Migration Index and Phagocytic Index has revealed that Piper longum fruits exhibit both specific and nonspecific immunostimulatory effect.[43]

Piperine exhibited central stimulant effects in various animal models, in an experiment with anesthetized dogs; piperine effectively counteracted the respiratory depression caused by morphine or pentobarbitone. A comparative study conducted with Anda fruit extract in petroleum ether, piperine, and nalorphine for their effects against morphine-induced respiratory depression and analgesia revealed that both piperine and nalorphine reversed the respiratory depression.[44]

Piper longum's traditional Ayurvedic claims for antiasthmatic activity have been validated via research. A fruit extract in milk reduces passive cutaneous anaphylaxis in rats and protected Guinea pigs against antigen induced bronchospasm.[45]

Due to its ability to readily distribute and enhance permeability, piperine has demonstrated the potential to enhance the bioavailability of a wide range of structurally and therapeutically diverse drugs. A study conducted with *'Trikatu,'* an *Ayurvedic* compound that prominently features *Piper longum* as one of its primary components, examined its combination with other medications. According to the findings, *Trikatu* boosted the bioavailability of these drugs through mechanisms that included promoting rapid absorption from the gastrointestinal tract, preventing initial liver metabolism following absorption, or a combination of both of these actions.[46]

14. *Vasa* (*Adhatoda vasica*)

Ayurvedic Pharmacological Properties

Vasa (*Adhatoda vasica*) possesses *Tikta, Kashaya Rasa*, *Laghu Ruksha Guna*, *Sheet Veerya, Katu Vipaka* and *Kaphapitta Doshahara* property along with *Shothhhara* (anti-inflammatory), *Vednasthapan* (analgesic), *Kanthya* (demulcent), *Kasahara* (anti tussive), *Swasahara* (anti asthmatic), *Shleshmahara (Kapha* alleviation) *Karma* .[47]

Pharmacology

The pyroquinazolone alkaloids vasicine & vasicinone are the main components of *Adhatoda vasica*. Vasicine at low concentrations caused the tracheal muscle to relax. Vasicine provided significant protection against histamine-induced bronchospasm at high concentrations. In vitro and in vivo bronchodilatory effects have been reported to be caused by vasicinone, the auto-oxidation product of vasicine.[48]

Deoxyvasicine retains a slight bronchodilator activity in addition to some uterotonic activity. Bronchodilation necessitates the presence of oxygen at the C3 position, while uterotonic activity does not rely on oxygen in this position. Vasicinone, an oxidative product of vasicine with an additional C-9 position and a C=O functional group, is found to be inactive, suggesting a possible conflict between two oxygen-related functions. To induce bronchodilation, the N-N-O triangle is essential. Deoxyhomo 'C' vasicinone has been discovered to be 6 to 10 times more potent than of aminophylline, attributed to its larger ring C size. Vasicine exhibits slight hypotensive effects, noticeable bronchodilation, and robust respiratory stimulant activities, whereas vasicinone induces bronchoconstriction in vivo and relaxation of tracheal muscles in vitro. Vasicinone enhances the bronchodilator effects of vasicine by acting as a substrate for the enzyme responsible for vasicine breakdown, thus protecting it from metabolic degradation. Adhatolic acid, a component of the essential oil found in Vasaka leaves, promotes expectoration.[49]

Vasicine stearate proves to be more effective than vasicine hydrochloride as a bronchodilator. The

ISSN: 2456-3110 REVIEW ARTICLE April 2024

physical binding of vasicine stearate by the oil formulation can lead to sustained release, potentially acting as a localized supply depot at the site of administration.[50]

Discussion

Dashamoola Churna is believed to have the potential for providing relief from inflammation.[51] *Bilva* and *Gambhari* were found to possess higher medicinal effect. *Bilva* and *Gambhari* contributed more to the antioxidant and anti-inflammatory properties of *Dashamoola*, they can be considered as a new anti-inflammatory drug.[52] *Dashmoola* also shows *Tridoshagna, Amapachana* properties.[53] *Trikatu (Shunthi*, *Maricha* and *Pippali)* is having anti-viral, antioxidant, analgesic, antibacterial, thyroxin stimulation, CNS stimulant, adjuvant in absorption and assimilation of drugs. Hence it is concluded that due to the preventive and therapeutic approach and multifunction of *Trikatu* it is beneficial in many body metabolic functions.[54] *Trikatu* has been reported to increase the bio-availability of drugs.[55] *Trikatu Churna* possess higher rate of phytoconstituents and promising antibacterial activity. This spicy product triggers natural immune system to fight against various enteric bacterial infections.[56] *Trikatu* being an herbal formulation can be the best solution for the bioavailability related issues with various *Ayurvedic* formulations.[57]

Conclusion

Dashmoola Katutrayadi drugs have potential effect to reduce bronchial asthma severity and recurrent attacks. Maximum of its drugs have *Katu Tikta Rasa*, *Laghu Guna*, *Ushna Veerya*, *Katu Vipaka* and *Vata-Kapha Shamak* properties. These statistics shows their excellent effect as *Shwasahar* (Anti allergic), *Kasahar* (Anti allergic) and *Shothahar* (Anti-inflammatory). Various studies included in this review have anti-oxidant, anti-bacterial, anti-viral, CNS stimulant, bronchodilator, expectorant, anticancer, antimicrobial, anti-histaminic, mast cell stabilizing and immunomodulator properties of drugs individually and in combinations. This study suggests that if any formulation made with the combination of these drugs may help in amolination of RAD in children.

References

1. Lai, Christopher KW, Richard Beasley, Julian Crane, Sunia Foliaki, Jayant Shah, Stephan Weiland, and ISAAC Phase Three Study Group. "Global variation in the prevalence and severity of asthma symptoms: phase three of the International Study of Asthma and Allergies in Childhood (ISAAC)." Thorax 64, no. 6 (2009): 476-483.
2. Singh, Sheetu, Bharat Bhushan Sharma, Sundeep Salvi, Jugesh Chhatwal, Kailash Chandra Jain, Lata Kumar, Mohan Keshav Joshi et al. "Allergic rhinitis, rhinoconjunctivitis, and eczema: prevalence and associated factors in children." The clinical respiratory journal 12, no. 2 (2018): 547-556.
3. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy,reprint year 2022, page no.455
4. Arul, V., S. Miyazaki, and R. Dhananjayan. "Mechanisms of the contractile effect of the alcoholic extract of Aegle marmelos Corr. on isolated guinea pig ileum and tracheal chain." Phytomedicine 11, no. 7-8 (2004): 679-683.
5. Kumar, KP Sampath, M. Umadevi, Debjit Bhowmik, Durgesh Mohan Singh, and A. S. Dutta. "Recent trends in medicinal uses and health benefits of Indian traditional herbs Aegle marmelos." The Pharma Innovation 1, no. 4 (2012).
6. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy,reprint year 2022, page no.469
7. Sharma, P. C., M. B. Yelne, T. J. Dennis, and A. Joshi. "Database on medicinal plants used in Ayurveda, Vol. 3." Central Council for Research in Ayurveda and Siddha, New Delhi, India (2001): 292-312.
8. Rathod, Keyur, L. Ram Mayur, Rakesh Jaliya, Ravindra Dhaka, Sumankumar Jha, and Bimal S. Desai. "Oroxylum indicum: ethnobotany, phytochemistry and therapeutic uses." communities 28 (2010): 26.
9. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy,reprint year 2022, page no.225
10. Kaswala, R., V. Patel, M. Chakraborty, and J. V. Kamath. "Phytochemical and pharmacological profile of Gmelina arborea: An overview." International research journal of pharmacy 3, no. 2 (2012): 61-64.
11. Pathala, Deepthi, A. Harini, and Prakash L. Hegde. "A review on gambhari (Gmelina arborea Roxb.)." Journal of Pharmacognosy and Phytochemistry 4, no. 2 (2015): 127-132.
12. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy,reprint year 2022, page no.223

13. Md. Babul Akhtar. "Clinical study on Sandhigatavata with special reference to Osteoarthritis and its management by Panchatikta ghrita Gugglu ", Dept. of Kayachikitsa (2006), I.P.G.T. & R.A., Jamnagar.
14. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy, reprint year 2022, page no.221.
15. Rambhau, Sonawane Suvarna, Deshpande Pradnya Ravindra, Pande Prasad, and Dr Shahane Vijay Chandrakant Prabhakharrao. "Phytochemical & Pharmacological activity of Agnimantha (Clerodendrum phlomidis linn. f)–A review." Int J Ayurvedic Herbal Med 4 (2014): 1615-1621.
16. Rabb, Umakant N. "Critical review on Agnimantha (Premna integrifolia Linn and Clerodendrum phlomodis Linn)." (2022).
17. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy,reprint year 2022, page no.820.
18. Ghosh, D., and A. Anandakumar. "Anti-inflammatory and analgesic activities of gangetin–a pterocarpenoid from Desmodium gangeticum." Indian Journal of Pharmacology 15, no. 4 (1983): 391.
19. Rathi, Anshu, Ch V. Rao, B. Ravishankar, S. De, and S. Mehrotra. "Anti-inflammatory and anti-nociceptive activity of the water decoction Desmodium gangeticum." Journal of ethnopharmacology 95, no. 2-3 (2004): 259-263.
20. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy,reprint year 2022, page no.822
21. Agrawal, Kanhaiya. "Review of drugs under Laghupanchmula." Journal of Pharmacognosy and Phytochemistry 7, no. 3 (2018): 3363-3369.
22. Singh, Narendra Kumar. "Anti-inflammatory and hepatoprotective activities of the roots of Uraria picta." International Journal of Green Pharmacy (IJGP) 11, no. 01 (2017).
23. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy,reprint year 2022, page no.282
24. Chopra, Ram Nath, and Ishwar Chander Chopra. Indigenous drugs of India. Academic publishers, 1994.
25. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy,reprint year 2022, page no.280
26. Agrawal, Kanhaiya. "Review of drugs under Laghupanchmula." Journal of Pharmacognosy and Phytochemistry 7, no. 3 (2018): 3363-3369.
27. Parmar, Sachin, Amit Gangwal, and Navin Sheth. "Solanum xanthocarpum (yellow berried night shade): a review." Der Pharm Lett 2, no. 4 (2010): 373-383.
28. Govindan, S., S. Viswanathan, V. Vijayasekaran, and R. Alagappan. "A pilot study on the clinical efficacy of Solanum xanthocarpum and Solanum trilobatum in bronchial asthma." Journal of ethnopharmacology 66, no. 2 (1999): 205-210.
29. Bector, N. P., and A. S. Puri. "Solanum xanthocarpum (Kantakari) in chronic bronchitis, bronchial asthma and non-specific unproductive cough.(An experimental and clinical co-relation)." The Journal of the Association of Physicians of India 19, no. 10 (1971): 741-744.
30. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy,reprint year 2022, page no.632
31. Bector, N. P., and A. S. Puri. "Solanum xanthocarpum (Kantakari) in chronic bronchitis, bronchial asthma and non-specific unproductive cough. (An experimental and clinical co-relation)." The Journal of the Association of Physicians of India 19, no. 10 (1971): 741-744.
32. Baburao, B., G. Rajyalakshmi, A. Venkatesham, G. Kiran, A. Shyamsunder, and B. Gangarao. "Anti-inflammatory and antimicrobial activities of methanolic extract of Tribulus terrestris Linn plant." Int J Chem Sci 7, no. 3 (2009): 1867-1872.
33. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi: chaukhamba Bharati Academy, reprint year 2022, page no.331
34. Tjendraputra, Effie, Van H. Tran, Damien Liu-Brennan, Basil D. Roufogalis, and Colin C. Duke. "Effect of ginger constituents and synthetic analogues on cyclooxygenase-2 enzyme in intact cells." Bioorganic chemistry 29, no. 3 (2001): 156-163.
35. Verma, Surendra K., M. Singh, P. Jain, and A. Bordia. "Protective effect of ginger, Zingiber officinale Rosc on experimental atherosclerosis in rabbits." (2004).
36. Kumar, Subodh, Kiran Saxena, Uday N. Singh, and Ravi Saxena. "Anti-inflammatory action of ginger: A critical review in anemia of inflammation and its future aspects." Int J Herb Med 1, no. 4 (2013): 16-20.
37. Deepak, Ekka, Dubey Swati, S. D. Khichariya, D. S. Dhruw, and S. M. Parhate. "Anti-oxidant and anti-inflammatory effect of sunthi in pranvaha srotas." Int J Res AYUSH Allied Syst Ayushdhara 4 (2017): 1056-8.
38. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi: chaukhamba Bharati Academy,reprint year 2022, page no.362.
39. Balkrishna, A., R. Shankar, Anupam Srivastava, Bhaskar Joshi, and Rajesh Kuamr Mishra. "Role of traditional medicines as a challenge for Coronavirus (Covid-19)." (2020).
40. Andrade, K. S., and S. R. S. Ferreira. "Antioxidant activity of black pepper (Piper nigrum L.) oil obtained by supercritical CO2." In III Iberoamerican conference on super critical fluids, Cartagena de Indias (Colombia) pp, pp. 1-5. 2013.

ISSN: 2456-3110 **REVIEW ARTICLE** April 2024

41. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy,reprint year 2022, page no.275
42. Kalpana, A. "Scientific Validation of Siddha Drug "Kadukkai Vadagam" for its Bronchodilator, Anti-Histamine and Anti-Oxidant properties in Rodents." PhD diss., Government Siddha Medical College, Chennai, 2017.
43. Manavalan, R., and J. Singh. "Chemical and some pharmacological studies on leaves of Piper longum Linn." Indian journal of pharmaceutical sciences (1979).
44. Manavalan, R., and J. Singh. "Chemical and some pharmacological studies on leaves of Piper longum Linn." Indian journal of pharmaceutical sciences (1979).
45. Banga, S., L. Garg, and C. Atal. "Effects of piplartine and crude extracts of Piper longum on the ciliary movements." Indian J Pharm 26 (1964): 139.
46. Kokate, C. K., H. P. Tipnis, and L. X. Gonsalves. "Anti-insect and juvenile hormone mimicking activities of essential oils of Adhatoda vasica, Piper longum and Cyperus rotundus." In 4. Asian Symposium on Medicinal Plants and Spices, Bangkok (Thailand), 15-19 Sep 1980. 1980.
47. P.V. Sharma, Dravyaguna vijnana,1st Ed.,Part 2, Varanasi:chaukhamba Bharati Academy, reprint year 2022, page no.241.
48. Rani, Jyoti, Shikha Pandey, Vinod Bihari Kumavat, and Uttam Kumar Sharma. "Role of Adhatoda vasaca in management of respiratory disorders." Environment Conservation Journal 19, no. 3 (2018): 73-75.
49. Atal, C. K. "Chemistry and pharmacology of vasicine." A New Oxytocic and Abortifacient, Regional research laboratory, Canal Road, Jammu-Tawi (1980): 125-6.
50. Atal, C. K. "Chemistry and pharmacology of vasicine." A New Oxytocic and Abortifacient, Regional research laboratory, Canal Road, Jammu-Tawi (1980): 125-6.
51. Murthy, K. R., and Chaukhambha Prakashan Shrikantha. "by Sharngadhara, Sharangdhara Samhita Madhyamakhanda 2/89–95." Page-66-68.
52. Vadivel, V. "In vitro antioxidant and anti-inflammatory activities of aqueous extract of an Ayurvedic formulation Dasamula and its herbal ingredients: A comparative study." International Journal of Green Pharmacy (IJGP) 10, no. 04 (2016).
53. Acharya Sushruta, Sushruta Samhita, Aharya Yadavji and Trikamji, Dalhanacharya commentary.7th Ed., Sutrasthana 38/56, 67,68, 73, 76, 77, Chaukhambha Orientalia; 2002, p.168.
54. Sadanandan, Sonu, and Mahendra Prasad. "An overview on miracles of trikatu." (2020).
55. Vineeth, Sharma, and Hem Kritika. "Phytochemistry and pharmacology of trikatu." Indian journal of Agriculture and Allied Science 1, no. 4 (2015): 193-94.
56. Dahikar, S. B., S. A. Bhutada, S. K. Vibhute, V. C. Sonvale, D. H. Tambekar, and S. B. Kasture. "Evaluation of antibacterial potential of Trikatu churna and its ingredients: An in vitro study." International Journal of Phytomedicine 2, no. 4 (2010).
57. Kaushik, Rahul. "Trikatu-A combination of three bioavailability enhancers." International Journal of Green Pharmacy (IJGP) 12, no. 03 (2018).

How to cite this article: Archit Kumar, Brahm Dutt Sharma, Nisha Ojha. Therapeutic effect of an Ayurvedic drug in the management of Respiratory Allergic Disorders in children - A comprehensive review. J Ayurveda Integr Med Sci 2024;4:167-175. http://dx.doi.org/10.21760/jaims.9.4.27

Source of Support: Nil, **Conflict of Interest:** None declared.

****