ejpmr, 2021,8(7), 142-149

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Review Article

ISSN 2394-3211

EJPMR

REVIEW ON AYURVEDIC PHARMACODYNAMIC AND PHARMACOLOGICAL ACTIONS OF KASAHARA MAHAKASHAYA

Dr. Pooja Panchaware[1]*, Dr. T.A. Pansare[2], Dr. D.V. Kulkarni[3], and Dr. Ashwini Makadi[4]

[1]PG Scholar, Dravyaguna Department, GAC Osmanabad.
[2]Associate Professor, Dravyaguna Department, GAC Osmanabad.
[3]Head of Department, Dravyaguna Department, GAC Osmanabad
[4]PG Scholar, Dravyaguna Department, GAC Osmanabad.

***Corresponding Author: Dr. Pooja Panchaware**

PG Scholar, Dravyaguna Department, GAC Osmanabad.

Article Received on 30/04/2021 **Article Revised on 19/05/2021** **Article Accepted on 08/06/2021**

ABSTRACT

There are various diseases of upper and lower respiratory track occurred which of them Cough is very common symptom as well as disease. A cough is unexpected expulsion of air through the huge breathing passages that can help clear them of fluids, irritants, foreign particles and microbes. Cough is only abnormal when persistent, painful or associated with sputum production. Ayurveda considers Kasa as Vata-kapha predominant condition and Avlambaka kapha and Prana-Udana vata are mainly involved. From the ancient time, plants have been playing a Important Role in acute as well as chronic stage of Kasa vyadhi. Acharya charaka mentioned group of ten potent drugs which are capable of pacifying the compliant of cough termed as Kasa-hara Gana. Kasahara-dashemani consists of ten herbs with multi-dimensional properties. Among these ten drugs some drugs are Sheeta viryatmaka such as Draksha, Aamalaki Bhumyamlaki and remaining are Ushna viryatmaka. Shrungi, Kantakari, Raktpunarnava are Katu Vipaki and remaining have Madhura vipaka property. Due to This Variations in properties of ten drugs it should be use in different conditions and types of Kasa vikara. In this review we will study the Pharmacodynemic and pharmacological actions of Kasahara mahakashaya.

KEYWORDS: Kasa, Kasahara mahakashaya, pharmacodyanemic, pharmacological action.

INTRODUCTION

The act of coughing is a defense mechanism that helps to keep the lower respiratory passages clear, protects them against the entry of foreign materials from outside, and prevents stagnation of secretions within the air passages. Cough is only abnormal when persistent, painful or associated with sputum production. Cough reflex is activated by stimulation of irritant receptors in the airway. Ayurveda considers kasa as vata-kapha predominant condition and Avlambaka kapha and Pran-Udana-Apana vata are mainly involved.[2] In Ayurveda many herbs are described and they are potent to pacify all disorders individually but no one is complete in the world so that Acharya Charaka mentioned 50 Mahakashaya in their Samhita and each Mahakashaya included ten herbs. In this 50 mahakashaya, one is Kasahara mahakashaya mentioned which capable to relieve Kasa vyadhi.[3] Ten potent drugs include in this Gana such as Draksha, Abhaya, Aamalaki, Pippali, Duralabha, Shrungi, Kantkari, Shweta-punarnava, Rakta-punarnava, Bhumyamalaki. All This Drugs are prescribed here are capable of strengthening the chest and potent enough to take out the phlegm accumulated in the chest and throat due to expectorating action. They are rejuvinative, immune modulator and energizers too. They are effective in various conditions of Kasa vyadhi according to their pharmacodynemic properties. In this review we will study the Pharmacodynemic and pharmacological actions of ten herbs.

Kasa vyadhi

'Kasnat kas uchyete' Ayurveda considers kasa as vata-kapha predominant condition and Avlambaka kapha and Pran-Udana vata are mainly involved.[2] Kasa or cough is manifested when the vitiated Vata pays visit to the respiratory track of our body causing the imbalance of doshas thus leading to you coughing.

Hetu (Etiology) – In Ayurveda various hetus (causes) of kasa are described some these like –Dhumopghat (Dust particles), Abhighat (trauma) especially Urobhighat, Ativyayama (over exertion), Rukshanna sevan (dry food), vegavarodha (controlling of natural reflexs) etc.[2]

For producing cough various minor and major causes are responsible such as:

1. Infections of respiratory tract.[1] Laryngitis, tracheitis, bronchitis, bronchiectasis, pulmonary tuberculosis.

2. Mechanical irritation of respiratory tract – Foreign body, inhalation of irritant gases, smoker's cough, chronic sinusitis, bronchogenic carcinoma.
3. Extrapulmonary causes – These induce coughthrough pressure on the trachea or bronchus, penetration or infiltration of the respiratory tract or through secondary involvement of lung parenchyma, massive enlargement of heart, enlarged mediastinal lymphnodes.
4. Reflex causes – Irritation of vagus nerve, foreign body or wax in the auditory meatus.
5. Psychogenic causes – Mental or emotional tension, insanity.

Table no 1:

Types of Kasa (Cough) – there are five varities of Kasa described such as.[2]

Type	Symptoms
Vataja kasa	Suska kasa (dry cough), swar bhed (Excessive hoarsness of voice), Hrit parshva uru shir shula (Excruciating pain in cardiac region, in the sides of chest and in the chest, headache, Daurbalya (weakness).
Pittaja kasa	Peeta nisthivana akshi (yellowness of the sputum and eyes), Tikta aasya (Bitterness in mouth), Trushna (thirst), Daha (burning sensation), Moha (unconsciousness), Aruchi(anorexia), Bhrama (giddiness).
Kaphaja kasa	Mandagni (suppressed agni), Aruchi (anorexia), Chardi(vomiting), Pinasa (chronic rhinitis), Utklesh (nausea) Gaurav(heaviness in the body)
Kshataja kasa	In the beginning, the patient coughs with none output of phlegm, but thereafter, he spits out phlegm alongside blood. Kanthen ruja (excessive pain in throat), jwara(fever), Shwasa (dyspnea), Trushna(thirst), swarbhed (hoarseness of voice)
Kshayaja kasa	The patient spits phlegm which is foul smelling, green or red in colour, and which is like pus. While coughing, he feels as if the heart is being displaced, Aruchi (anorexia), swarbhed (hoarsness of voice) etc.

According to modern science, many different and at times, highly characteristic types of cough, may be identified[1], e.g. 1) the dry and irritable cough of early pulmonary tuberculosis, maximal on walking up and in early night; 2) the dry and hawking cough of chronic pharyngitis, laryngitis, tracheitis or neurosis; 3) the dry, nocturnal cough of chronic pharyngitis and enlareged uvula; 4) the barking cough of hysteria or nervousness or arotic aneurysms; 5) the short and suppressed cough of pleurisy or acute lobar pneumonia with pain; 6)paroxysmal cough of whooping cough, bronchial spasm or carcinoma; 7) smoker's cough may occur at any time since here respiratory tract inflammation is chronically present, it is characteristically provoked by smoking.

Samprapti (Mechanism) - Due to the elevated Kapha, Pranvaha srotasa get obstructed. Apan vayu (Vata) get obstructed in the lower part of the body. It moves upwards, afflicts the channels of circulation in the upper part of the body, takes over the function of Udan vayu and due to this the Udan vayu moves forcefully upword. Because of increased udan vayu the function of Pran

vayu obstruct and finally Pran vayu also goes upward. The elevated Apana, Udana, and Prana vayu come out forcefully from the mouth and during this the typical sound are produced called as 'Kasa'[2]

According to modern science the afferent pathway includes the sensory end organs within the pharynx, larynx, trachea and bhronchi, and sensory fibers within the ninth and tenth cranial nerves. The act of coughing, usually comprises of a sudden and severe or violent expiration after a deep inspiration and closure of the vocal cords, and may be associated in severe cases with bronchospasm or glottic spasm, resulting in dyspnoea, cyanosis, anoxia and death.

If we can't take proper treatment of Panchvidha kasa it get converted into Shwasa and Rajayakshma vyadhi which are very difficult to cure. For these, in Ayurveda mentioned Kasahara Gana by Acharyas such as Surasadi Gana which is effective in Kasa vyadhi explained by Acharya Sushruta and Acharaya Vagbhata, where as Kasahara Mahakashaya described by Acharya Charaka.

Table no 2:[3,4,5]

Sr. no	Charaka	Sushruta	Vagbhata
1	Draksha	Surasa (Shweta,Krushna)	Surasa (Shweta,Krushna)
2	Abhaya	Phaninjaka	Phaninjaka
3	Aamalaki	Kasamarda	Kasamarda

4	Pippali	Vidanga	Vidanga
5	Duralabha	Kataphala	Kakmachi
6	Shrungi	Nirgundi	Nirgundi
7	Kantkari	Kshavaka	Kshavaka
8	Shweta-punarnava	Kharapushpa	Bharangi
9	Rakta-punarnava	Bhustruna	Bhustruna
10	Bhumyamlaki	Sugandhaka	Kataphala

Acharaya charaka mentioned group of ten potent drugs which are capable of pacifying the compliant of cough termed as Kasahara Mahakashya.

Table no 3[3,6]

Name	Image	Latin name	Family	Morphology	Part used
Draksha		Vitis vinifera	Vitaceae	Climber	Fruit
Abhaya		Terminalia chebula	Combretaceae	Tree	Fruit
Aamalaki		Emblica officinalis	Euphorbiaceae	Tree	Fruit
Pippali		Piper longum	Piperaceae	Climber	Fruit, Root
Duralabha		Fagonia cretica Linn.	Zygophyllaceae	Shrub	Whole plant
Shrungi		Pistacia integerrima	Anacardiaceae	Tree	Galls (Shrugakar kosha)
Kantkari		Solanum surattense	Solanaceae	Shrub	Whole plant
Shweta-punarnava		Trianthema portulacastrum	Nyctaginaceae	Shrub	Root, seed, whole plant
Rakta-punarnava		Boerhavia diffusa	Nyctaginaceae	Shrub	Root, seed, whole plant

Bhumyamlaki		Phyllanthus urinaria	Euphorbiaceae	Shrub	Whole plant

Rasapanchaka of Kasa-hara gana[6,7] –

Table no 4:

Name	Rasa	Guna	Virya	Vipaka	Karma
Draksha	Madhura	Snigdha, guru, mrudu	Sheeta	Madhura	Balya, Bruhana
Abhaya	Kashaya pradhan pancha rasa (except Lavana)	Laghu, ruksha,	Ushna	Madhura	Tridosh-hara, Rasayana, Anulomana
Aamalaki	Amlapradhana pancharasa (Alavana)	Laghu, ruksha, Sheeta	Sheeta	Madhura	Rasayana, Kasahara, Kushtaghna
Pippali	Katu	Laghu, snigdha, tikshna	Anushna-sheeta	Madhura	Deepana, Rasayana, Shwasa-kasahara
Duralabha	Kashaya, tikta, Madhura	Laghu, snigdha	Ushna	Madhura	Kapha-hara, jwaraghna
Shrungi	Kashaya, tikta	Laghu,Ruksha	Ushna	Katu	Kapha-vatahara
Kantkari	Tikta, Katu	Laghu, Ruksha, Tikshna	Ushna	Katu	Kapha-vatahara, Krimighna
Shweta-punarnava	Madhura, Tikta, Kashaya	Laghu, Ruksha	Ushna	Madhura	Tridoshahara, Kasahara, Kusthghna
Rakta-punarnava	Katu, Tikta, Kashaya	Laghu, Ruksha	Ushna	Katu	Tridoshahara, Kasahara, Kusthghna
Bhumyamlaki	Tikta, Kashaya, Madhura	Laghu, Ruksha	Sheeta	Madhura	Kapha-pittahara, Kusthghna

Chemical composition and pharmacological actions –

Table no 5:

Drug	Chemical compositions	Pharmacological activities
Draksha (Vitis vinifera)[8]	Flavonoids, Polyphenols, anthocynins, Proanthocynidins, Procyanidines etc	Anti-inflammatory Anti-bacterial Anti-microbial Cardioprotective Hepatoprotective Neuroprotective Antioxidative
Abhaya (Terminalia chebula)[9]	Chebulic acid, gallic acid, chebulagic acid, ellagic acid, chebulinic acid and anthraquinones, triterpene acid, galloyl glucose, anthraquinonoid	Ethyl acetate and methanolic extract of fruit of T.Chebula demonstrated significant antitussive activity Anti-microbial Anti-inflammatory Neuro-protevtive Anti-convulsant Anti-oxidant Anti-tumor activity.
Aamalaki (Emblica officinalis)[10]	Galic acid, Vit. C, Flavonoids, Ellagic acid, Polyphenol, Phyllemblin**,** Emblicanin A & B**,** Linolic acid**.**	Anti-tussive activity Anti-viral Anti-bacterial Anti-microbial Immunostimulant activity

		antidepressant activity Hepatoprotective Hypolipedemic Ant-diabetic
Pippali (Piper longum Linn.)[11]	Piperine, Piperlongumine, sylvatin, sesamin, diaeudesmin, pipermonaline, piperundecalidine, Flavonoids, steroids	Anti-microbial Anti-asthmatic Carminative Anti-inflammatory Anti-diarrhoeic Anti-oxidant Anti-parkinsonian Nootropics Anti-epileptic, Hepatoprotective Anti-hyperlipidemic Anti-arthritic Anti-amebic Anti-fungal Antihelmintic Immuno-modulatory activity.
Duralabha (Fagonia cretica Linn.[12]	Tritepenoid, saponins, alkaloids, flavonoids, tannins,glycosides etc.	Ethanolic extract of Fagonia cretica shows Anti-inflammatory and anti-asthamatic activity Anti-cancer activity Anti-microbial Anti-oxidant Analgesic Antipyretic
Shrungi (Pistacia integerrima)[13,14]	Alkaloids, Flavonoids, tannins, saponins and sterols, pistacienoic acid, triterpene alcohol and tritepenoic acid, resin etc.	The ethanol and aqueous extract of leaves and gall shows significant Anti-inflammatory action. Anti-microbial Anti-oxidant Analgesic Anti-fungal and Antitumor activity.
Kantkari (Solanum surattense)[15]	Carpesterol, Solanine-S, solasodine, solasonine, campesterol, diosgenin sitosterol.	Anti-allergic Anti-asthmatic Anti-inflammatory Immuno-modulatory Hepatoprotective Cardioprotective activity.
Shweta-punarnava (Trianthema portulacastrum)[16]	Punarnavine (Alkaloids), B-sitosterol, Alanine, Aspartic acid.	Anti-asthmatic Anti-inflammatory
Rakta-punarnava (Boerhavia diffusa)[16]	Punarnavine (Alkaloids), B-sitosterol, Alanine, Aspartic acid, rotenoids, xanthones, purine nucleoside, lignans Boerhaavic acid, Campesterol.	The methanolic extract of aerial and root parts of Boerhaavia diffusa exhibited strong anti-bacterial activity compared to petroleum ether and chloroform extract. Anti-inflammatory Anti-asthmatic activity. Hepato-protective Hypoglycemic Anti-proliferative Anti-estrogenic Anti-convulsant
Bhumyamlaki Phyllanthus urinaria.[17]	Quercetin, urinariaflvone (Flavonoids), lignans, tannins, carboxylic acid (Phenolics), ellagic acid, terpenoids and other secondary metabolities.	The isolated flavonoids from P. urinaria showed anti-inflammatory, anti-microbial and anti-oxidant activity Anti-diabetic Anti-cancer

		Hepatoprotective Cardioprotective

Mechanism of action – Kasahara-dashemani consists of ten herbs with multi-dimensional properties. Among these ten drugs some drugs are Sheeta viryatmaka such as Draksha, Aamalaki Bhumyamlaki and remaining are Ushna viryatmaka where as Shrungi, Kantakari, Raktpunarnava are Katu Vipaki and remaining have Madhura vipaka property. Due to this variations in properties of Ten drugs it should be use in different conditions and types of Kasa vikara.

Kasahara action of Sheeta viryatmaka dravyas (Draksha, Aamalaki, Bhumyamlaki).[2,3]
Due to the Madhura rasa and snigdha, guru guna of draksha the elevated Laghu, Ruksha guna of Vata weaken and elevated upward directed Pran, Udan and Apan Vayu get lowerd, whereas due to Sheeta virya and Madhura vipaka, Balya and Bruhmana, Pittghna karma done which is useful to kept Urasthan stronger and does the Kasaghna Karya.

Kashaya rasa and Laghu, Ruksha guna of Aamalki and Bhumyamlaki do the Kaphgna karya and due to these the obstructed Pranvaha srotasa became clear. Hence Draksha, Aamalki and Bhumyamlaki are useful in specifically **Pittanubandhi Kaphaja Kasa**.

Kasahara action of Ushna viryatmaka dravyas.[2,3]
Ushna virya and Madhura vipaka dravya – Abhaya, Duralabha, Shweta-punarnava
Ushna virya and Katu vipaka dravya - Shrungi, Kantakari, Rakta-punarnava
Anushna-Sheeta virya and Madhura vipaka dravya – Pippali

Ushna virya and Madhura vipaka dravya – Abhaya, Duralabha, Shweta-punarnava
Kashaya rasa and Laghu, Ruksha guna of Abhaya and Shweta-punarnava do the Kaphgna karya and due to these the obstructed Pranvaha srotasa became clear as well as the Madhura vipaka and Ushna virya of this dravyas do Vatanuloman Karya which is chief mechanism to break the pathology of Kasa vyadhi.

Duralabha does the Pittghna karya due to the Kashaya, Tikta, Madhura rasa and Laghu, snigdha guna along with Kaphagna and Vatanuloman Karya by Ushna virya it is useful in **Pittanubandhi Kasa** whereas **Abhaya and Shweta-punarnava effective in Vata-Kapha Kasa.**

Ushna virya and Katu vipaka dravya - Shrungi, Kantakari, Rakta-punarnava -
Due to the Kashaya, Tikta rasa and Laghu, Ruksha guna of Shringi and Kantakari the elevated Kapha get normal level and does the passage of Pranvaha srotasa clear, On the other side due to Ushna virya and Katu vipaka of these dravyas do Vatanulomana karya and became effective in **Kapha-Vataja kasa.**

According to Bhavaprakashkara, Raktpunarnava is "Shlema-pitta-rakta-vinaashini", The Tikta, Kashaya rasa of Raktpunarnava does Pittghna karya and reduce the burning sensation of chest so that this drug is useful in **Pittanubandhi Kaphaja Kasa.**

Anushna-Sheeta virya and Madhura vipaka dravya – Pippali
Pippali have Katu rasa, Laghu, Tikshna properties which are useful to Controlled the elevated Kapha along with it has Anushna-sheeta virya and Madhura vipaka which does the Vatanuloman karya. Due to Kaphaghna and Vatanulomana karya the obstructed passage of Pranvaha srotasa get clear and does the Kasghna karya.In view of the condition specificity, in Ama avastha of Kasa Pippali churna is effective.

Dravya and its formulations useful in Kasa vyadhi.[19,20]
Table no 6:

Sr.no	Dravya	Formulation (Kalpa)
1	Draksha	Draksharishta Drakshadi Kwatha Drakshadi Avaleha Drakshadi ghruta
2	Abhaya	Abhayarista Pathyadi Vati Vyaghri haritaki Citrakaharitaki Agastiharitaki Dantiharitaki HaritakiKhand
3	Aamalaki	Chyavanprash Brahmarasayana Dhatrilauha Dhatrirasayana

4	Pippali	Gudapippali PippaliKhanda Pippalyasava
5	Duralabha	Duralabhadi Kwatha
6	Shrungi	Shrngyadi churna Karkatadi churna Balchaturbhadrada
7	Kantkari	Nidigdhika Kwatha Vyaghriharitaki Kantakari ghruta Vyaghri tailam
8	Shweta-punarnava	Puarnavashtka
9	Rakta-punarnava	Punarnavasa Punarnavambu Punarnavadi mandur Puarnavashtka
10	Bhumyamlaki	Bhumyamalaki churna

DISCUSSION AND CONCLUSION

Coughing is a defence mechanism that helps to keep the lower respiratory passages clear, protect them against the entry of foreign materials from outside, and prevents stagnation of secretions within the air passages. Ayurveda considers Kasa as Vata-kapha predominant condition and Avlambaka kapha and Prana-Udana vata are mainly involved.

Acharya charaka mentioned group of ten potent drugs which are capable of pacifying the compliant of cough termed as Kasa-hara Gana.

- Kasahara-dashemani consist of ten herbs with muliti-dimensional properties.
- The drugs which directly act on the disease Kasa like Kantakari, Pippali, Shringi and Sweta Punarnava act by **Kaphavatahara** property[19].
- The **vatahara** drugs such as Haritaki cause Vata anulomana and correct the deranged Vata.
- The drugs with **Vata-pittahara** (Duralabha, Draksha) and **Kapha-pittahara** (Bhumyamalaki) properties come into action when there is Daha (Burning sensation) like symptoms due to association of Pitta.
- In consideration to the dosha involved, it is concluded that **Pippali** is effective in **Kaphaja** and **Vata-kaphaja Kasa**.
- **Abhaya** is effective in **Vataja** as well as **Vata-kaphaja** Kasa and **Draksha ,Aamalaki, Bhumyamalaki** in **Pittaja Kasa**.
- In view of the condition specificity, in **ama avastha** of Kasa, **Pippali churna** is effective, while **Abhaya** and **Aamalaki churna** are useful in **ama** and **nirama avastha** of Kasa.

REFERENCES

1. Golwalla's Medicine for students Edited by Milind Nadkar The health sciences Publisher New Delhi, London, Panama 25th edition.
2. Acharya Brahmanand Tripathi, Charak Samhita, Chikitsasthana, Kasachikitsa adhyaya 18/37. Varanasi, Chaukhamba Surbharati pratishthan, Ed:Reprinted, 2010; 91.
3. Acharya Brahmanand Tripathi, Charak Samhita, Sutrasthana, Shadavirechanashatashritiya adhyaya 4/37. Varanasi, Chaukhamba Surbharati pratishthan, Ed:Reprinted, 2010; 91.
4. Kaviraj Ambikadutta Shastri, Sushruta samhita, Sutra sthan, Dravyasamgrahaniya Adhyaya 38/18-19 chaukhamba Sanskrit Sansthan Varanasi.
5. Kaviraj Atrideva Gupta, Ashtangahrudayama samhita, Sutrasthan, Shodhanadigana samgraha Adhyaya 15/30-31 chaukhamba Prakashana Varanasi.
6. Dr. Gangashaya Pandeya, Bhavprakash Nighantu, Chaukhamba Bharti Acadamy, 2008.
7. Bapalala G.Vaidya Adarsha Nighantu Varansi Chaukhamba bharati Academy, Edition, 2016; 2: 348.
8. Marjan Nassiri-Asl et al Review on the pharmacological effect of Vitis vinifera and its bioactive compounds – An international journal Devoted to Pharmacological and Toxicological Evaluation of Natural Product Derivatives, 2009; 23(9): 1197-1204.
9. Xiu-Juan Zhang et al Pharmacological activities of Terminalia chebula – China journal of chinese materia medica., 2016; 41(4): 619-623.
10. Md Rubaiyat Hasan et al Phytochemistry, Pharmacological activities and traditional uses of Emblica officinalis: A review-International current pharmaceutical journal, 2016; 5(2): 14-21.
11. Vaishali Yadav et al A systemic review on Piper longum L. – Journal of ethnopharmacology, 2020; 247: 112255.
12. Dinesh Puri, Anil Bhandari Fagonia: a potential medicinal desert plant- Journal of Nepal Pharmaceutical Association, 2014; 27 (1): 28-33.
13. Shafiq ur Rahaman et al Evluation of the stem bark of Pistacia integerrima Stew ex Brandis for its antimicrobial and phytotoxic activities-African journal of Pharmacy and Pharmacology, 2011; 5 (8): 1174.

14. Y Bibi, et al The study of anticancer and antifungal activities of Pistacia integerrima extract in vitro - Indian journal of pharmaceutical sciences, 2012; 74(4): 375.
15. Siva kumar Tekuri et al Phytochemical and Pharmacological activities of Solanum surratense Burm. f.-A review - journal of Applied pharmaceutical science, 2019; 9(03): 1126-136.
16. AR Mahesh et al Detail study on Boerhaavia diffusa plant for its medicinal importance – A Review – Res J Pharm Sci., 2012; 1(1): 28-36.
17. Madamanchi Geethangili et al A Review of the Phytochemistry and Pharmacology of Phyllanthus urinaria L.- Frontiers in pharmacology, 2018; 9: 1109.
18. Utility of Kasaharadashemani among ayurveda practitioners in karnataka, India:A survey.
19. Govinda Dasji, Bhaishajya Ratnawali, Chaukhamba Sanskrit Bhavan, First edition, 2006; 1.
20. Dr. Brahmanand Tripathi, Sharangadhara samhita, Madhyama Khanda, Chaukhamba Surbharati Prakashan, Varanasi.