



IJAPC

VOLUME 9 ISSUE 3 2018

**GREEENTREE GROUP
PUBLISHERS**

E ISSN 2350-0204

WWW.IJAPC.COM

"A peer-reviewed journal dedicated to allied Sciences"



Trikatu and Madhu Pratisarana in Kukunaka- A Review

Bhapil^{1*}, Rahul², Abhinav Rathore³ and Rahul Nigam⁴

¹Dept. of Kaumarbhritya, Abhilashi Ayurvedic College & Research Institute, Chailchowk, Distt. Mandi, H.P., India

²Dept. of Shalaky Tantra, Abhilashi Ayurvedic College & Research Institute, Chailchowk, Distt. Mandi, H.P., India

³Dept. of Panchkarma, Abhilashi Ayurvedic College & Research Institute, Chailchowk, Distt. Mandi, H.P., India

⁴Dept. of DRasa Shastra & Bhaishajya Kalpana, Abhilashi Ayurvedic College & Research Institute, Chailchowk, Distt. Mandi, H.P., India

ABSTRACT

Kukunaka is a particular type of inflammatory disease of eye seen in *Ksheerapa avastha*, mostly this disease is caused during the infancy period of around 8 months of age. It may occur as a secondary complication to *Dantotpatti*. *Acharya Kashyapa* the pioneer in *kaumarbhritya* opines this disease as *ksheer doshaja* one. *Kukunaka* is explained as the *Netra vartam gata Kapha-Raktaj vyadhi*. It is a *bala Netra rog* associated with weakness of eyes with photophobia. *Kukunaka* is the most common eye disease of newborns and is correlated to Ophthalmia neonatorum or neonatal conjunctivitis. Inflammation is caused by a local irritant or by bacteria & herpes simplex virus. It occurs due to maternal infections during labour and delivery and post-delivery complications or infections. It is an allergic manifestation and the child goes on rubbing the forehead, eyes, nose and throat. This disease is associated with watering & purulent discharge from both eyes, there may be an associated keratitis or uveitis. As per the *Acharya Sushruta* the *Pratisarana* of *Trikatu* and *Madhu* is useful in *Kukunaka*. *Pratisarana* is a *sthanika chikitsa* in which the medicine is taken with index finger and applied at site of infection.

KEYWORDS

Trikatu, Madhu, Pratisaran, Kukunaka, Ophthalmia Neonat



Greentree Group Publishers

Received 07/07/18 Accepted 15/09/18 Published 10/11/18



INTRODUCTION

Kumarbhritya is an important branch of *Ayurveda* which deals with *Kumarbharan*, *Ksheerdosh shodhan kriya of dhatri*, treatment of *dusta stanyaj vyadhis* and treatment of *grahaj vyadhi*¹. *Acharya Kashyapa* is considered as the supreme authority in *Kumarbhritya tantra* and he has considered this branch to be the best among the 8 *angas of Ayurveda*². The branch has been compared to the excellence of *Agnideva* among other *devas*. *Kukunaka* eye diseases has been described in infants by various authors. This disease occurs in infants due to various causes. *Kukunaka* disease is found in the eyelids due to intake of vitiated Breast milk by doshas.

Table 1 Causative factors of *Kukunaka* as per various *Samhitas*

S. no	Name of <i>Samhitas</i>	Causative Factor
1.	<i>Sushruta Samhita</i> ³	<i>Dusta Stanya due to vitiated Vata, Pitta, Kaph & Rakta</i>
2	<i>Kashyapa Samhita</i> ⁴	<i>Dusta Stanya due to vitiated Kapha, Rakta</i>
3	<i>Ashtanga Hridaya</i> ⁵	<i>Dantotpatti Nimitaj Vyadhi</i>
4	<i>Yogratnakar</i> ⁶	<i>Ksheer Dosha janya</i>
5	<i>Harita Samhita</i> ⁷	<i>Kshaar Yukta Dugdha</i>
6.	<i>Ravana krita Kumartantra</i>	<i>Ksheer Dosha janya</i>

Samprapti of *Kukunaka* as per *Acharya Kashyapa*:

Due to various causative factors, *doshas* of Mother gets aggravated and causes obstruction of the *strotas* including *Stanya*

Vaha strotas, hence *stanya* gets vitiated with *doshas*⁸. When baby consumes this breast milk, vitiated doshas enters inside the baby's body causes *akshep* (convulsions) and *ushanata* (rise in body temperature), thus it vitiates *Kapha* and *Rakta* to cause disorders of eye by name *Kukunaka*⁹.

Hence mother who consumes causative factors in excess results in her breast milk vitiation and same is transferred to the baby.

Table 2 Clinical features of *Kukunaka* as per different *Samhitas*

S.no.	Name of <i>Samhita</i>	Clinical features
1.	<i>Sushruta Samhita</i>	<i>Ati mardan of Akshikut, nasa & lalata due to ati kandu, Photophobia, Excessive exudates with tears, Adhered eyelids</i> ¹⁰ .
2.	<i>Kashyapa Samhita</i>	Excessive lacrimation, absence of sneezing, discomfort, frequent rubbing of nasal area, forehead & eyeballs, itching in the eyes, intolerance to light, swelling over eyelids ¹¹ .
3.	<i>Ashtanga Hridaya</i>	<i>Vartma shoola, Pachilayta, karna nasa akshi mardana</i> ¹² .
4.	<i>Yogratnakar</i>	<i>Netra kandu, Netra srava, lalata akshi kantha nasa gharshanam</i> ¹³ .
5.	<i>Ravanakrita Kumartantra</i>	<i>Netra atikandu, srava, Mastakakshikuta, Nasagharshanam, Netronmilankshaya</i>

OPHTHALMIA NEONATORUM

Ophthalmia Neonatorum or Neonatal Conjunctivitis is characterized by inflammation of conjunctiva in newborn.



Inflammation is caused by a local irritant (chemical conjunctivitis) or by bacteria (*Neisseria gonorrhoeae*, *Chlamydia trachomatis*, Staphylococci, Streptococci and Gram negative sp.) and Herpes simplex virus¹⁴. The risk in newborns depends on maternal infections, circumstances during labor and delivery, prophylactic measures and post-delivery exposures to infections¹⁵. *Chemical conjunctivitis* most commonly seen is associated with silver nitrate which usually resolves within 48 hrs.

Gonococcal conjunctivitis characterized by bilateral conjunctival oedema, lid edema with thick & purulent exudates which begins 1-4 days after birth. There may be corneal ulceration or panophthalmitis with loss of vision.

Chlamydial conjunctivitis presents with inflammation, eye discharge and eye lid swelling 5- 14 days after birth¹⁶.

Epidemiology:

Neonatal Conjunctivitis is usually acquired during vaginal delivery which reflects the sexually transmitted infections. *Chlamydia trachomatis* is the most common cause of Ophthalmia Neonatorum in the United States, where incidence rate is 8.2/1,000 births¹⁷. The prevalence of this infection in India is 0.5 to 33 %¹⁸.

Clinical features:

Ophthalmia neonatorum is characterized by congestion and chemosis of the

conjunctiva, edema of the eyelids and purulent discharge¹⁹. Watering and purulent discharge from both eyes in neonates, there may be an associated keratitis or uveitis in Gonococci infection the sign and symptoms are severe, there are systemic features like fever, urethritis, arthritis, endocarditis, meningitis and septicemia²⁰.

After birth the inflammation in eyelids caused by silver nitrate drops occurs within 6–12 hours. The incubation period Gonococcal conjunctivitis is 2–5 days, and for that due to *C. trachomatis* is 5–14 days. Gonococcal infection is present from birth or may be lingered by 5 days due to ocular prophylaxis.

Gonococcal conjunctivitis starts with serosanguineous discharge and inflammation. The discharge becomes purulent and thick with eyelid inflammation and chemosis in one day. The infection may reach the further layers of the conjunctiva & the cornea if the patient treatment is lingered. Complications include iridocyclitis, corneal ulceration & perforation and panophthalmitis. Conjunctivitis caused by *C. trachomatis* may vary from mild inflammation to severe inflammation of the eyelids with thick purulent discharge. Conjunctiva is chiefly affected in this disease while the cornea is rarely affected. Nursery acquired conjunctivitis is severe disease presented by



presence of eyelid edema, thick & purulent discharge & further may lead to the septicemia & shock.

Diagnosis:

A conjunctival swab will help identify the organism.

Conjunctivitis appearing after 48 hr should be evaluated for a possibly infectious cause.

Culture test of purulent discharge & Gram staining helps in proper diagnosis. The differential diagnosis includes Dacryocystitis caused by con-genital lacrimal duct obstruction with lacrimal sac distention (dacryocystocele)²¹.

DRUG REVIEW

***Shunthi (Rz.)*²²**

Shunthi consists of dried rhizome of *Zingiber officinale* Roxb. (Fam. Zingiberaceae)

SYNONYMS:

Sanskrit: *Aushadha, Muhaushadha, Nagara, Vishva, Vishvabheshaja, shringavera, Vishvaushadha*

Assamese: Adasuth, Aadar Shuth

Bengali: Suntha, Sunthi

English: Ginger root

Gujrati: Sundh, Suntha

Hindi: Ardraka

Kannada: Shunthi

Kashmiri: Shonth

Malayalam: Chukku

Marathi: Sunth

Oriya: Sunthi

Punjabi: Sund

Tamil: Sukku, Chukku

Telugu: Sonthi, Sunti

Urdu: Sonth, Zanjabeel

CONSTITUENTS - Essential oil, pungent constituents (gingerol and shogaol), resinous matter and starch.

PROPERTIES AND ACTION

Rasa: *Katu*

Guna : *Snigdha , laghu*

Virya : *Ushna*

Vipaka: *Madhura*

Karma: *Anulomana, Deepana, Hridya, Pachana, Vatakaphapaha, amadoshahara*

THERAPEUTIC USES - *Agnimandya, shvasa, adhmana, amavata, Pandu, Udararoga*

***Maricha (Frt.)*²³**

Marica consists of dried fruit of *Piper nigrum* Linn. (Fam. Piperaceae)

SYNONYMS -

Sanskrit : *Vellaja, Krishna, Ushna*

Beng. : *Golmorich, Kalamorich, Morich*

Eng. : *Black Pepper*

Guj. : *Kalimori*

Hindi. : *Kalimirch*

Kan. : *Karimonaru, Menaru*

Mal. : *Kurumulaku*

Mar. : *Kalamiri*

Punj. : *Galmirich, Kalimirch*

Tam. : *Milagu*

Tel. : *Miriyalu, Marichamu*



CONSTITUENTS - Alkaloids (Piperine, Chavicine, Piperidine, Piperetine and Essential Oil.

PROPERTIES AND ACTION -

Rasa : Katu, Tikta

Guna : Laghu, Ruksha, Tikshana

Virya : Ushna

Vipaka : Katu

Karma : Shleshmahara, Deepana,

Medohara, Pittakara, Ruchya,

Kaphavatajit

Vatahara, Chedana, Jantuasanna, Chedi,

Hridroga, Vataroga.

IMPORTANT FORMULATIONS -

Marichyadi Gutika, Marichyadi Taila,

Trikatu Churna

THERAPEUTIC USES - *Shvasa, Shoola,*

Krimiroga, Tvagroga.

Pippali (Ft.)²⁴

Pippali consists of the dried fruits of *Piper longum* Linn. (Fam. Piperaceae)

SYNONYMS

Sanskrit : *Kana, Magadha, Saundi,*

Krishna, Magadhi,

Assamese : *Pippali*

Bengali : *Pipul*

English : *Long Pepper*

Gujrati : *Lindi Peeper*

Hindi : *Pipar*

Kannada : *Hippali*

Malayalam : *Pippali*

Marathi : *Pimpali*

Oriya : *Pipali, Pippali*

Punjabi : *Magh, Magh Pipali*

Tamil : *Arisi Tippali, Thippili*

Telugu : *Pippalu*

CONSTITUENTS - Essential Oil and Alkaloids

PROPERTIES AND ACTION

Rasa : Madhura, Katu, Tikta

Guna : Snigdha, Laghu

Virya : Anushna

Vipaka : Madhura

Karma : Deepana, Hridya, Kaphahara,

Ruchya, Tridosahara, Vatahara, Vrishya,

Rasayana, Rechana

THERAPEUTIC USES - *Shoola, Arsha,*

Gulma, Hikka, Kasa, Krimi, Kshaya,

Kushtha, Pliha

Roga, Prameha, Shvasa, Trishna, Udara

Roga, Ama Vata, Amadosha, Jvara.

Madhu²⁵

Madhu is a Sugary secretion deposited by honey bees.

Synonyms: *Madhu, Kshodra, Makshika,*

Madhvika, Pushpasava, Kusumasava

English Name: *Honey*

Hindi Name: *Shahad*

Types: *Pauttika, Bharamara, Kshaudra,*

Makshika, Chhatara, Aarghya, Auddalaka,

Dala

Chemical constituents : *Fructose, glucose,*

Sucrose, Dextrine, formic acid, volatile oil,

enzymes, maltose, amino acids.

Rasa – madhura

Anurasa- Kashaya



Guna- laghu, Ruksha, picchila

Virya- Sheeta

Vipaka- Katu

Doshagnata- Tridosh Nashak

Karma- Vrana Shodhan, Vrana Sandhan,

Vrana Ropana, Krimihara, Kasa-Swash

hara, Raktapitta nashak

Table 3 Rasa Panchaka of Trikatu & Madhu

Sr. No.	NAME	GUNA	RASA	VIRYA	VIPAKA	DOSHAGHNATA	KARMA
1	Shunthi	Laghu, Snigdha	Katu	Ushna	Madhura	Kapha - Vataghna	Shothhar Deepana, Pachana, Vrishya, Hridya,
2	Maricha	Laghu, Tikshana	Katu	Ushna	Katu	Kapha - Vataghna	Deepana, Pachana, Shulaghna Lekhan
3	Pippali	Laghu, Snigdha	Katu	Ushna	Madhura	Kapha - Vataghna	Shoolagna, Shothhara Deepana, Pachana, Rasayana, Vrishya,
4	Madhu	Laghu, Ruksha, Sheeta	Madhura	Sheeta	Madhura	Tridoshaghna	Vrana Shodhan Ropana, Sandhana, Chakshushya, Chedan

Pratisarana:

Pratisarana Chikitsa is explained in most of the samhitas.

“Pratisaryate Gharshyate aneneti pratisaranam”²⁶

“Shanairgharshanam Angulya

TaduktamPratisaranam”²⁷

“Angulya Gharshanam”²⁸

Pratisarana is a gentle massage done with the finger for shorter duration on teeth, tongue or buccal cavity in the form of Kalka, Churna, Rasakriya or Avaleha²⁹.

Acharya Sushruta has mentioned it as one of the Upkarmas of Vrana and also it is described in *Netra roga chikitsa* as

paschata karma to remove the lesions.

Pratisarana is done mainly in *kapha Pradhana vyadhi* with expected *lekhana* effect.

Table 4 Classification of Pratisarana according to Different Acharyas

Acharayas	Types
Sushruta ³⁰	Kalka, Rasakriya, Kshaudra, Churna
Ashtanga Hridya ³¹	Kalka, Rasakriya, Churna
Ashtanga Sangraha ³²	Kalka, Rasakriya, Churna
Bhavaprakasha ³³	Kalka, Churna, Avaleha
Yogaratanakara ³⁴	Kalka, Churna, Avaleha
Sharnghdharma ³⁵	Kalka, Churna, Avaleha

Churna is the *upkalpana* of kalka. It is a dried powdered form of drug³⁶. *Trikatu Churna* mixed with *Madhu Pratisarana* is explained in *Sushruta utara tantra* as a



treatment modality of *Kukunaka*. *Trikatu Churna* is powder of *Shunthi*, *Maricha* & *Pippali*³⁷.

DISCUSSION

DISCUSSION ON MODE OF ACTION OF PRATISARANA:

Pratisarana is a mechanical approach, which is gentle rubbing with index finger. It mainly possesses *shodhan* and *ropan* properties. By *pratisarana* mechanical pressure is exerted over and around the eye which remove desquamated epithelial cells, infected debris and bacterial colonies and increases inhibition of bacterial diffusion into the tissues. *Pratisarana* also enhances absorption of active principles of *dravyas* i.e. *Shunthi*, *Marich*, *Pippali* and *Madhu*. Based on the above information *Pratisarana* helps in healing of tissues and has excellent *Shodhan Kriya*.

DISCUSSION ON MODE OF ACTION OF DRUGS

As per the *Acharya Sushruta* the *Pratisarana* of *Trikatu* and *Madhu* is useful in *Kukunaka*. *Trikatu* consist of *shunthi*, *maricha* & *pippali*, so these have different properties which are *vrana shodhaka* & *vrana ropaka*, *Shunthi* is having *shothhara* & *hrudya* properties, *Maricha* is having *shulaghana* & *lekhana* properties *Pippali* is having *shulahar* & *shothaghana* properties

Madhu is having *Vrana Shodhaka*, *ropaka* & *chedan* properties. It is essential to remove the *dushti* by the virtue of *shodhan* & *vranaropan* to achieve healing.

Trikatu & *madhu* both are having these properties which are alleviating these inhibitory factors

Hence it is concluded that *trikatu* with *madhu* possess high efficacy in *vrana shodhan*, fine healing so it can be recommended as cost effective, effective therapy & easy to prepare in treatment of *Kukunaka*.

CONCLUSION

By the above review of each drug we conclude that *trikatu* with *madhu* have *shodhan* & *ropan* properties and different formulations of *trikatu* and *madhu* needs to be tried as anti-inflammatory application for *kukunaka*. Local Application of *trikatu* & *ghrita* provided good results by reduction of *kukunaka* & promotion of healing.



REFERENCES

1. Kaviraj Ambikadatta Shastri, Ayurveda Tatvasamdeepika Hindi Commentary , Sushruta Samhita, Sutra Sthana, Chapter 1, Verse No. 7, edition reprint 2011; Varanasi; Chaukhamba Sanskrit Series;2011.
2. Proff. Premvati Rewari, Text with English Translation and commentery on Kashyapa Samhita or Vriddh Jivakiya Tantra, Vimana Sthana , Chapter 2, Verse No. 10, Page No. 97, edition reprint 2008, Varanasi; Chaukhamba Sanskrit Series;2008.
3. Kaviraj Ambikadatta Shastri, Ayurveda Tatvasamdeepika Hindi Commentary on Sushruta Samhita of Sushruta, Uttar Tantra, Chapter 19, Verse No. 8, edition reprint 2011; Varanasi; Chaukhamba Sanskrit Series;2011.
4. Nepalraj Guru, Pandit Hemraj Sharma with Vidyotini Hindi commentery on Kashyapa Samhita or Vriddh Jivakiya Tantra, Khill Sthana, Chapter 13, Verse No. 6,7,8 edition reprint 2015, Varanasi; Chaukhamba Sanskrit Series;2015.
5. Pandit Hari Sadashiv Shastri Paradkaraha, ShreemadVagbhatavirachitam, Ashtanga Hridaya with Sarwangsundrakhyaya Vyakhaya, Uttar Tantra, Chapter no. 8, Verse no.19, Chaukhamba Sanskrit Sansthana, Varanasi;2017
6. Bhisagratna Brahamshankar Shastri, Vidyotaini commentary on Yogratnakar , chapter no. 72, Verse no. 7, Sanskrit Sansthana,7th edition, 2002.
7. Vd. Jaimani pandey, Sanskrit text with hindi translation on Harita Samhita, Tritiya Sthana, chapter no 54, Verse no-2, Chaukhamba Visvabharati, 2010
8. Nepalraj Guru, Pandit Hemraj Sharma with Vidyotini Hindi commentery on Kashyapa Samhita or Vriddh Jivakiya Tantra, Khill Sthana, Chapter 13, Verse No. 5,6 edition reprint 2015, Varanasi; Chaukhamba Sanskrit Series;2015.
9. Nepalraj Guru, Pandit Hemraj Sharma with Vidyotini Hindi commentery on Kashyapa Samhita or Vriddh Jivakiya Tantra, Khill Sthana, Chapter 13, Verse No. 8 edition reprint 2015, Varanasi; Chaukhamba Sanskrit Series;2015.
10. Kaviraj Ambikadatta Shastri, Ayurveda Tatvasamdeepika Hindi Commentary , Sushruta Samhita , uttar tantra, Chapter 19, Verse No. 9,10, edition reprint 2011; Varanasi; Chaukhamba Sanskrit Series;2011.
11. Nepalraj Guru, Pandit Hemraj Sharma with Vidyotini Hindi commentery on Kashyapa Samhita or Vriddh Jivakiya Tantra, Khill Sthana, Chapter 13, Verse No.



9,10,11 edition reprint 2015, Varanasi; Chaukhamba Sanskrit Series;2015.

12. Pandit Hari Sadashiv Shastri Paradkaraha,

ShreemadVagbhatavirachitam, Ashtanga Hridaya with Sarwangsundrakhyaya Vyakhaya, Uttar Tantra, Chapter no. 8, Verse no.19,20, Chaukhamba Sanskrit Sansthana, Varanasi;2017

13. Bhisagratna Brahamshankar Shastri, Vidyotaini commentary on Yogratnakar , chapter no. 72, Verse no. 7,8, Sanskrit Sansthana,7th edition, 2002.

14. Piyush Gupta, Text book of Pediatrics, 1st Edition, CBS Publishers; 2016; 237.

15. Olitsky E, Nelson B. Behrman R, Kliegman R, Jenson H. Nelson Text book of Pediatrics, 17th Edition, Saunders Elseviere ;chapter 633; Page no 1911-1914;2004

16. Piyush Gupta, Text book of Pediatrics, 1st Edition, CBS Publishers; 2016; 237-238.

17. Olitsky E, Nelson B. Behrman R, Kliegman R, Jenson H. Nelson Text book of Pediatrics, 17th Edition, Saunders Elseviere ;chapter 633; Page no 1911-1914;2004

18. Conjunctivitis in the new born– a comparative study, indian journal of pathology and microbiology.

19. Olitsky E, Nelson B. Behrman R, Kliegman R, Jenson H. Nelson Text book of Pediatrics, 17th Edition, Saunders

Elseviere ;chapter 633; Page no 1911-1914;2004

20. A Parthasarthy, IAP text book of Pediatrics, 6th edition, Jaypee the health sciences publisher, chapter no18.4, page no 1125;2016.

21. Olitsky E, Nelson B. Behrman R, Kliegman R, Jenson H. Nelson Text book of Pediatrics, 17th Edition, Saunders Elseviere ;chapter 633; Page no 1911-1914;2004

22. API Part 1,1999, Vol.-I; 65

23. API Part 1,1999, Vol.-III; 53

24. API Part 1,1999, Vol.-IV; 42

25. Kaviraj Ambikadatta Shastri, Ayurveda Tatvasamdeepika Hindi Commentary , Sushruta Samhita, Sutra sthana, Chapter 45, Verse No.132, edition reprint 2011; Varanasi; Chaukhamba Sanskrit Series;2011.

26. Sharangadhara, Sharangadhar Samhita, commentary Adhamalla's dipika and Kasirama's gudharatha-dipika,reprint edition 2012,Varanasi;Chaukambha orientalia, Uttar khand, Chapter 10, verse 13-18,page 354.

27. Bhisagratna Brahamshankar Shastri, Vidyotaini commentary on Yogratnakar , pp 298, Chaukhamba Sanskrit Sansthana,7th edition, 2002.

28. Bhavaprakasha of Shree Bhavamishra Commentery by Dr. Bulusu Sita ram, part



2, Chaukambha orientalia, 1st edition, 2010, reprint 2014, chapter 66, Verse 19 Page 770.

29. Pandit Hari Sadashiv Shastri Paradkaraha, Shreemad Vagbhata virachitam, Ashtanga Hridaya with Sarwangsundrakhyaya Vyakhaya, sutra sthana, Chapter no. 22, Verse no.13, Chaukhamba Sanskrit Sansthana, Varanasi; 2017, page no 300.

30. Kaviraj Ambikadatta Shastri, Ayurveda Tatvasamdeepika Hindi Commentary, Sushruta Samhita, Chikitsa sthana, Chapter 40, Verse No.69, edition reprint 2011; Varanasi; Chaukhamba Sanskrit Series; 2011, page no 230

31. Pandit Hari Sadashiv Shastri Paradkaraha, Shreemad Vagbhata virachitam, Ashtanga Hridaya with Sarwangsundrakhyaya Vyakhaya, sutra sthana, Chapter no. 22, Verse no.13, Chaukhamba Sanskrit Sansthana, Varanasi; 2017, page no 300.

32. Astanga Sangraha of Vagbhatta Vol.1 by Proff. K.R. Srikant Muthy, Chaukambha orientalia, 9th edition, 2005, reprint 2007, sutra sthana, chapter 31, verse 12, page 535.

33. Bhavaprakasha of Shree Bhavamishra Commentery by Dr. Bulusu Sita ram, part 2, Chaukambha orientalia, 1st edition, 2010, reprint 2014, chapter 66, Verse 19 Page 770.

34. Bhisagratna Brahamshankar Shastri, Vidyotaini commentary on Yogratnakar ,

pp 298, Chaukhamba Sanskrit Sansthana, 7th edition, 2002.

35. Sharangadhara, Sharangadhar Samhita, commentary Adhamalla's dipika and Kasirama's gudharatha-dipika, reprint edition 2012, Varanasi; Chaukambha orientalia, Uttar khand, Chapter 10, verse 13-18, page 354.

36. Sharangadhara, Sharangadhar Samhita, commentary Tatvadipika hindi Tika bt Pandit Durga dutt Shastri, reprint edition 2002, Varanasi; Chaukambha orientalia, Madhyam khand, Chapter 6, verse 1, Page 344.

37. Kaviraj Ambikadatta Shastri, Ayurveda Tatvasamdeepika Hindi Commentary, Sushruta Samhita, Uttar Tantra, Chapter 19, Verse No. 10, edition reprint 2011; Varanasi; Chaukhamba Sanskrit Series; 2011.