

A REVIEW ARTICLE ON SANKRAMAK ROGA MENTIONED IN AYURVEDIC LITERATURE

*¹Prof. Dr. Kalpana K. Jadhav, ²Prof. Dr. Milind M. Godbole, ³Dr. Sanyogita Ganpat
Phadatare

¹Professor and HOD, Dept. of Swasthavritta and yoga, Yashwant Ayurvedic College
Postgraduate Training and Research Center, Kodoli, Dist-Kolhapur, Maharashtra.

²Guide, Dean and Professor, Dept. of Swasthavritta and yoga, Yashwant Ayurvedic College
Postgraduate Training and Research Center, Kodoli, Dist-Kolhapur, Maharashtra.

³PG Scholar, Swasthavritta and Yoga Department, Yashwant Ayurvedic College PGT &
RC, Kodoli, Tal- Panhala, Dist- Kolhapur. Maharashtra.

Article Received on
06 August 2025,

Revised on 27 August 2025,
Accepted on 17 Sept. 2025

<https://doi.org/10.5281/zenodo.17213083>



*Corresponding Author

**Prof. Dr. Kalpana K.
Jadhav**

Professor and HOD, Dept.
of Swasthavritta and yoga,
Yashwant Ayurvedic
College Postgraduate
Training and Research
Center, Kodoli, Dist-
Kolhapur, Maharashtra.

ABSTARCT

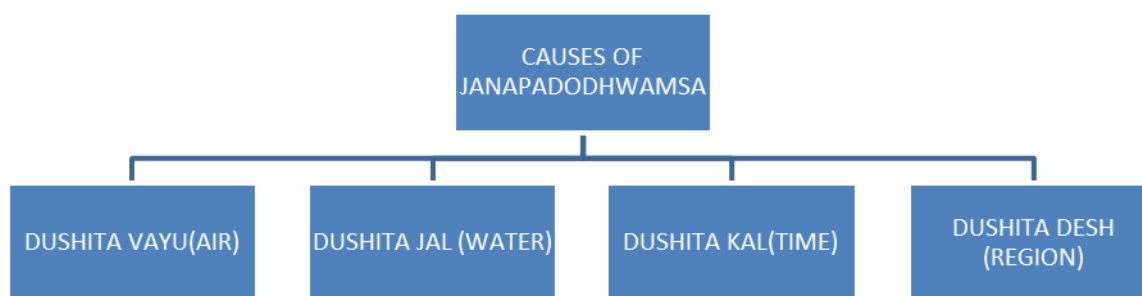
Prevention is the wise way to avoid incidence of diseases. In today's era various amount of communicable diseases are seen to be in increasing amount, the prevalence rate has seen increasing while mortality rates are decreasing, communicable diseases still contribute significantly to the overall disease burden in the country. In Ayurveda Sankramaka roga has been explained which can correlate to communicable diseases which mainly occurs due to microorganism invasion. In literature of Ayurveda like Charak Samhita described concept of Janapadodhwansa (mass destruction) due to vitiated state of vayu, jal, doshas and dhatu, which resembles Pandemic of modern science. This article gives brief information about ayurvedic view on Sankramak Roga and their management.

KEYWORDS: Ayurveda, Sankramaka roga, Janapadodhwansa, Aupsargik Roga, Agantuja vyadhi, Communicable diseases, Infectious diseases.

INTRODUCTION

Communicable diseases can be associated with Sankramaka Roga and Aupsargik Roga terminologies in Ayurveda. Classical texts of Ayurveda mentioned various references related

to infectious diseases, their treatments, ways of prevention. As per Ayurveda, the pandemic situation can be considered as Janapadodhwansa caused by Dushita vayu(Air), jal(Water), kal(Time) and desh(Region). Various means of transmission of Sankramak Roga are mentioned as prasanngat, gatra sansparshat, sahbhojanat, sahshayya, etc means these diseases can transmit from one another through physical, chemical and biological means. As per Ayurveda the current pandemic problem can be considered as an Agantuja vyadhi. Agantuja vyadhi can spread from one person to another and when large population gets affected then these diseases turned to Janapadodhwamsa.



AIMS AND OBJECTIVES

1. To review the basic principles of Sankramak rogas described in various text of Ayurveda.
2. To Study the Nidan of Sankramak Roga described in various text of Ayurveda.
3. To study the concept of Communicable Disease & its causes.
4. To compare the principal of the Sankramaka Roga with special reference to Communicable Disease.
5. To review the Sankramaka Roga with respect to Communicable Diseases in present scenario for its preventions.

MATERIALS AND METHODS

1. Literary review on Sankramaka Roga have been collected from different Ayurvedic classical text i.e. Charak, Sushrut and Vagbhat Samhita.

2. Literary review on communicable diseases has been collected from different modern texts and from various research papers, journals, articles and internet.
3. After the collection & selection of the matter have been summaries.
4. All the matter have been making fruitful & useful according to present needs of forthcoming Scholar.

Concepts about Janapadodhwans

The disease or ailment and their causes are same in most of the ancient texts^[1],

INFECTIOUS DISEASES ACCORDING TO CHARAK SAMHITA

In charak samhita vimansthan adhyay 3rd when agnivesh ask why people having different prakruti, age, ahar, bal, agni still got diseased which destructs population in particular area. It is similar with pandemic of modern terminology. Answerd by bhagvan atreya as people can have different Prakruti & Aahara but factors like Vayu & Desha are common and vitiation of these factors leads to the production of Roga which termed as Janapadodhwans. Common factors causing epidemic are Dushita vayu(Air), jal(Water), kal(Time) and desh(Region). In janapadodhwansaniyam adhay of charak vimansthan characteristic's features of polluted air, water, place and time had given.^[2] According to Charaka Adharma is the root cause of Janapadodhwans along with awful conduction of Dincharya and Ritucharya.^[3] Charaka believe that accumulation of causative factors like; vitiated Doshas, Dushyas along with depleted Bala enhance susceptibility for the disease.^[4]

In viman sthan of charak samhita krimis have been described and considered as two types:- innate and disease causing /creepy krimis. The krimis described as tiny, having large number of legs and posseses different colours. Unhygienic living pattern may enhance prevalence of such krimis in our body.^[5]

Charak samhita not only mentioned unmad, apasmar, atisar and jwar but also elaborated infectious diseases along with their types. Sutra sthan chapter 18 mentioned shoth and described krimi bite as reason for agantuj shoth. charak samhita in 18/4 chapter states that swelling and inflammation confirm transitional presence of bacteria or other microbes.^[6]

Charak samhita viman chapter 3 described role of jal(water), vayu(air), desh(region) and kala(time) in relation to epidemic diseases and mentioned term Aapgat guna. The contamination / pollution through water and air produces various infectious diseases while

specific environmental conditions associated with *desh* and *kala* affects mass population for certain period of time.^[7]

Charak *chikista* 30 *adhyay* explains vaginal diseases may occurs due to unhygienic condition of vaginal portion or due to use of contaminated water or through the infections caused by *krimis*.^[8]

Charak *sutra sthan* 17/8,9,10 encompasses description of *uradvajatrugna vyadhi*, here it was mentioned that dust smoke cold and sunlight are some major reasons for infections in head region. Characteristics of *krimi* which causes *shiroroga* also described and it was stated that *krimis* in head region produces diseases symptoms, in this regard *krimij* and *sannipataj* both types of disorders termed as infectious disorders.^[9]

Charak *sutra sthan* 17/37-38 mentioned that heart of hypersensitive person may affected by *krimis* which produced through *kled*, initially they produces in a particular region of heart then gradually affecting whole body.^[10]

In *nidan sthan adhyay* chapter 8/22 *apasmar* the reason of *aagantuj apasmar* is similar to *unmad*, here *jwara* and *rajyashma* were considered as infectious diseases here diseases are described which occur due to presence of other disease in the situation of *vyadhi sankar* when disease occurs due to the secondary infection.^[11]

With reference to *trushna roga*, *charak samhita* (*charak chikista sthan* 22/7) considered *trushna roga* as *aopsargik roga* and described it is as a painful and harmful diseases considered *trushna* as *updrav* of *visarproga*.^[12] Also *acharya sushrut* has considered word *aopsargik* as *upasragaj* as like infectious.^[13]

In *charak chikista sthan* 23 ailments related to poisonous infections are described with description of poisonous organisms^[14] and their management.^[15] This chapter encompasses information related to signs, symptoms and diseases caused by *mushak*^[16], *luta*,^[17] dogs and poisonous flies.^[18]

25th chapter of *charak chikistasthan vrana chikista* mentioned *agantuj vrana* and infectious diseases caused by *krimi*.^[19] Similarly in chapter, 24 *vrnadosh* it was mentioned that microorganisms and *krimis* may causes wounds on skin, ligaments and veins.^[20]

Trimarmiya adhyay explains diseases of shir, hriday, basti where krimij hriday roga^[21] and krimij shir roga were considered as diseases of hriday and shir caused by krimi. Similarly bad smell in ear and eye infections also mentioned diseases caused by krimis and termed as jeerna pratishay, peenas, apeenas, dushtipratishya and peenas.^[22]

Charak sutrasthan chapter 6 mentioned hansodak as the natural method of disinfection to prevent microbial infections.^[23] In chapter 7 krimis were mentioned as a cause of aagantuj disease, here bhuta indicates bacterial infection.^[24] Similarly kshya and causes of kshay are also mentioned in charak sutra sthan 17/77 which somewhere quotes about infectious diseases further elaborates sub- bacterial infections and other infections which may cause kshay, here prevalence of kshay of ashtbindu oaj considered as lethal.^[25]

In vidhradhi chapter reasons of internal vidhradhi were described such as sanklistha, virudh and dushta bhojan. In this regards the krimi was considered as one of the reason for yakrit vidhradhi.

In 26th chapter of charak sutrasthan, virudha ahar concept has been mentioned, where 18 types of virudha aahar have been described including, pak virudha, kostha virudha, parihar virudha, upchar virudha and vidhi virudha which have also been considered as the cause of infectious disease which may occurs due to the virudha aahar such as: aandhapan, jalodar, pandu, visuchika, kilas, kustha, grahdhu, shoth, jwar and peenas.^[26]

In chikista sthan of charak chapter 13, consumption of dirty and unhygienic foods and vegetable may lead development of abdominal diseases is mentioned in samnya samprapti of udar roga.^[27]

In chapter 7 of chikistasthan, charakacharya mentioned treatment of kustha where term virudha aanpan was cause of kustha. Virudha aanpan means consumption of bad quality food and water which infected by various means. Intake of such types of food materials may not only lead kustha but also causes disorders such as : twachagat and strotogat. This concept of aanpan not only implies to kustha but also to the charakokt epidemic concept of virudh aanpan. The basic concept of virudh aanpan associated with pranahvah strotas, aanpan strotas, rasvaha strotas, mutravah strotas, malvah strotas, raktavah strotas and mansvah strotas.^[28]

In chapter 3rd of vimansthan, bhagwan atreya has answered to questions of agnivesh that the reason behind dushit vayu, jal kal, desh are mainly the adharma or the sins done in previous

life, which means pradnyaparadha is the root cause behind Janapadodhwans, along with shatraprabhav, rakshoganadi and abhishap.^[29]

INFECTIOUS DISEASES ACCORDING TO SUSRUTA SAMHITA

Acharya Sushrut not only discussed infectious diseases but also mentioned types of infection and their mode of transmission:-

According to Sushruta Samhita Nidansthan Adhyaya, Acharya Sushruta has mentioned Aupasargik rogas in Kushthanidan. They are contagious diseases and Prasnaga, Gatra Sansparsha, eating & sleeping together, sexual contact; sharing clothes and ornaments, etc. can be considered as mode of transmission for such diseases. Kustha, Jwara, Shosha and Netrabhishyanda are considered as Aupasargik rogas which spread from person to person.^[30]

Sushrut samhita described sankramak as aupsargik roga and stated that sexual intercourse, physical contact, air contamination, eating, sleeping and sharing objects with infected person may transmit contagious disease from one person to another. In this regards leprosy, fevers, tuberculosis, conjunctivitis and some other diseases were considered as diseases to be transmitted from one person to another. In this statement aacharya mentioned Kustha and other infectious diseases which are directly or indirectly associated with infections.^[31]

It is believed that term prasangat refers with yona prasang since infectious diseases may transmit by infectious person to other.

Gatra prasanga described as contact with the body of an infected person may be through sexual intercourse or by other ways. These aopsargik diseases may get transmitted from one to another and current scenario of life style enhances such types of contact thus life style need to modify in such a way so that chances of gatra prasanga reduced.

Nihshwasat indicates infectious diseases which may occur due to the breathing through the respiratory system. Diseases occurs through the respiratory infections such as; jwara and masurika etc. Comes under the category of sankramaka roga they spread through swasa, kasa and pratishay.

Acharya clarified the spread of such infections by taking example of jwar and shosh. Eating food with infected person, sleeping together, sharing clothes and other objects also spreads infections from one to another.^[32]

Sushruta samhita also describes epidemic Sankraman as Janpadodhawans which harms the human body at a particular area. Similarly frequent touching of patient body, inhaling the infected air and sitting with diseased person may lead to diseases such as : kustha, jwara, shosh, netrabhishyanda and another aupasargik roga which may spread from one person to another.^[33]

Aacharya sushrut has also mentioned Gramyadharam Sevan as causes of kustha. Mentioned in shlok 34-35 corresponding to prasangat kustha which may occur due to sexual intercourse with the person suffering from kustha.^[34]

In sutra sthan chapter 45 aacharya sushrut has mentioned water induced infectious diseases. Sutrasthan 45/8-9 mentioned that when a person comes in contact with insects, urine, debris of dead insects and infected water then one may suffers from external disease like boils and internal diseases like ajjerna and malavrodha.^[35]

Various kind of infectious diseases described by acharya sushruta through various contexts as are congregated like following:-

Nidan sthan	chapter 7 th	-- sannipatik udar roga
	Chapter 12 th	-- updansh
	Chapter 13 th	- parivartika, nirudh prakas, ahiputna, mukhdushika, masurika, arunsika and arbud
	Chapter 16 th	- osthaprakop . Upkush, galshundika and tandukeri
Kalpasthan	chapter 7 th	- alarka visha
Uttartantra	chapter 20 th	-karnapak, putikarna, krimikarna, karnastrav etc
	Chapter 24 th	- pratishay, dushtpratishya
	Chapter 25 th	- krimij shiroroga
	Chapter 26 th	- krimi
	Chapter 61 th	-graha
	Chapter 28 th	- yonivyapad
	Chapter 40 th	- atisar
	Chapter 43 th	- krimij hriday roga

Various kind of infectious diseases described by acharya vagbhata through various contexts as are congregated like following:-

In nidan sthan chapter 12th udar roga^[36], in chapter 13th - shoth are explained.^[37]

In uttarsthan chapter 6th - bhutounmad^[38], chapter 15th - netra roga^[39], in chapter 19th - nasa roga^[40], dustha pratishay, pakva pratishay and apeenas^[41], mukha roga^[42] and danta roga^[43] are explained.

In chapter 23th of uttarsthan shiroroga nad krimis are mentioned.^[44]

Chapter 38th explains mushak, aaku and alerk visha.^[45]

ACCORDING TO LAGHUTRAYI

Aachrya Madhavkar has mentioned the classification of infectious diseases and their modes of transmission along with detailed description of infectious disease. Similarly Aacharya Bhavprakash has mentioned some other infectious diseases in his classical text. He classified these diseases under the category of Kuprasangaj. So we can say that Ayurveda literature encompasses useful information related to infectious diseases. Ayurveda text provides knowledge about the types of microbes, their sources. And mode of transmission and management of disease caused by such microbes. Therefore it is required to correlates folklore concepts of infectious disease with modern perspective to enhance understating of traditional knowledge regarding microbial infections.^[46]

CONCLUSION

Sankramak Roga, as explained in Ayurveda, constitutes a significant group of communicable diseases that adversely impact individual health and community well-being, while also creating an economic burden. These diseases may spread through direct contact or indirectly via contaminated air, water, objects, and other environmental factors. Modern medicine has contributed various therapeutic options, yet concerns like drug resistance and adverse reactions limit their sustainable effectiveness. Ayurveda emphasizes that the most effective strategy lies in **prevention, immunity enhancement (Bala Vriddhi), and maintenance of Dosha equilibrium**, rather than relying solely on curative interventions.

Classical Ayurvedic texts explain that diminished Dhatus, altered body temperature, lowered immunity, and Doshic vitiation increase susceptibility to microbial invasion, leading to conditions such as Kustha, Jwara, Shosha, and Netrabhishyanda. Furthermore, Acharya Charaka describes the pivotal role of air (Vayu), water (Udaka), habitat (Desha), and seasonal

variations (Kala) in the emergence and spread of Aupsargika Rogas, often culminating in epidemic outbreaks (Janapadodhwansa).

In this context, **Dinacharya (daily regimen)**, **Rutucharya (seasonal regimen)**, **Sadvritta Palana (ethical and behavioral discipline)**, and **Acharya Rasayana (code of conduct for mental and social well-being)** play a central role in strengthening immunity, maintaining internal balance, and protecting the body from communicable diseases. By promoting healthy lifestyle practices, enhancing psychosocial stability, and encouraging harmony with natural cycles, these regimens form a comprehensive preventive framework against Sankramak Roga.

Thus, Ayurveda not only explains the pathogenesis of communicable diseases through Doshic imbalance and microbial factors but also offers a holistic preventive approach. Incorporating **lifestyle discipline, seasonal adaptation, ethical conduct, and immune-strengthening measures** ensures better disease resistance at both individual and community levels, thereby providing sustainable strategies to combat Sankramak Roga.

REFERENCES

1. International archives of Integrated medicine, vol 6, issue 10, October, 2019, by Vd. Archana D. Inchekar -A review on the guidelines in Ayurveda as swasthvritta on prevention and promotion of health along with longevity of life with its applied aspects.
2. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, vimansthan adhyay 3 janapadodhwasniyavimanadhyay, 567-570.
3. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, vimansthan adhyay 3 janapadodhwasniyavimanadhyay, 571.
4. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, vimansthan adhyay 3 janapadodhwasniyavimanadhyay, 568.
5. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, vimansthan adhyay 7 vyadhitrupiyvimanadhyay, 604-612.
6. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, sutrasthan adhyay 18 trishithiyadhyay, 282-285.
7. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, vimansthan adhyay 3 janapadodhwasniyavimanadhyay, 568-571.

8. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikistasthan adhyay 30 yonivyapatchikstadhyay shlok no 18, 740.
9. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, sutra sthan adhyay 17 kriyantshirasiadhyay shlok no 8/9/10, 264-265.
10. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, sutrasthan adhyay 17 kriyantshirasiadhyay shlok no 36/37/38, 267-268.
11. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, nidan sthan adhyay 8 apasmar nidnadhyay shlok no 22, 31, 541-542.
12. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikista sthan 22 trushnachikisthadhyay shlok no 7, 514.
13. Drustartha sushrut chintan by vaidya p.g.athavale, shree dhanvantari books publishers Nagpur second volume 19 October 2017, nidansthan adhyay 5, shlok no 33-34, 476.
14. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikista sthan 23 vishachikstadhyay shlok no 10-17, 528,529,530.
15. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikista sthan 23 vishachikstadhyay shlok no 35-37, 535.
16. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikista sthan 23 vishachikstadhyay shlok no 148, 550.
17. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikista sthan 23 vishachikstadhyay shlok no 144-146, 550.
18. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikista sthan 23 vishachikstadhyay shlok no 157, 551.
19. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikista sthan 25 dvivraniyachikistadhyay shlok no 6-7-8, 592.
20. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikista sthan 25 dvivraniyachikistadhyay shlok no 31-34, 596.
21. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikista sthan 26 trimarmiyachikisth adhyay shlok no 80, 624.
22. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikista sthan 26 trimarmiyachikisth adhyay shlok no 104-115, 628,629,630.
23. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, Charak sutrasthan 6 tasyashitiya adhyay shlok no 46-47-48, 122.
24. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, sutra sthan adhyay 7 navegandharaniya adhyay shlok no 51-52, 138.

25. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, sutra sthan adhyay 17 kriyantashirasiya adhyay shlok no 77, 275.
26. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, sutra sthan adhyay 26 atreyabhadrapapyaydhyay shlok no 80-81, 383.
27. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikistasthan adhyay 13 shlok no 9-10-11, 288.
28. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, chikistasthan adhyay 7 shlok no 4-7, 178.
29. Charak samhita by vaidya vijay Shankar kale, chaukhamba publication delhi 2016, vimansthan adhyay 3 janapadodhwasniyavimanadhyay shlok no 19-23, 570-571.
30. Drustartha sushrut chintan by vaidya p.g.athavale, shree dhanvantari books publishers Nagpur second volume 19 October 2017, nidansthan adhyay 5, shlok no 3, 469.
31. Drustartha sushrut chintan by vaidya p.g.athavale, shree dhanvantari books publishers Nagpur second volume 19 October 2017, nidansthan adhyay 5, shlok no 33-34, 476.
32. Drustartha sushrut chintan by vaidya p.g.athavale, shree dhanvantari books publishers Nagpur second volume 19 October 2017, nidansthan adhyay 5, shlok no 33, 476.
33. Drustartha sushrut chintan by vaidya p.g.athavale, shree dhanvantari books publishers Nagpur second volume 19 October 2017, nidansthan adhyay 5, shlok no 33, 476.
34. Drustartha sushrut chintan by vaidya p.g.athavale, shree dhanvantari books publishers Nagpur second volume 19 October 2017, nidansthan adhyay 5, kusthanidan, shlok no 3, 469.
35. Drustartha sushrut chintan by vaidya p.g.athavale, shree dhanvantari books publishers Nagpur second volume 19 October 2017 sutrasthan adhyay 45 dravadravayavidhi adhyay shlok no 8,9,10, 336.
36. Sarth Vagbhat by Dr Ganesh Krushna Gadre, chaukhamba surbharati publication, Varanasi 2018, nidansthan adhyay 12, udarnidanam, 197-200.
37. Sarth Vagbhat by Dr Ganesh Krushna Gadre, chaukhamba surbharati publication, Varanasi 2018, nidansthan adhyay 13, Pandurogashophvisarpanidanam, 201-203.
38. Sarth Vagbhat by Dr Ganesh Krushna Gadre, chaukhamba surbharati publication, Varanasi 2018, uttarsthan adhyay 6, unmadpratishedhah –shlok no 15-16 bhutonmand, 371.
39. Sarth Vagbhat by Dr Ganesh Krushna Gadre, chaukhamba surbharati publication, Varanasi 2018, uttarsthan adhyay 15, sarvaskhirogavidnyanam, 397-398.

40. Sarth Vagbhat by Dr Ganesh Krushna Gadre, chaukhamba surbharati publication, Varanasi 2018, uttarsthan adhyay 19, nasarogavidnyaniya shlok no 1-8, 408.
41. Sarth Vagbhat by Dr Ganesh Krushna Gadre, chaukhamba surbharati publication, Varanasi 2018, uttarsthan adhyay 19, nasarogavidnyaniya shlok no 9-12, 408,409.
42. Sarth Vagbhat by Dr Ganesh Krushna Gadre, chaukhamba surbharati publication, Varanasi 2018, uttarsthan adhyay 21, mukharogavidnyaniya shlok no 1-10, 411-412.
43. Sarth Vagbhat by Dr Ganesh Krushna Gadre, chaukhamba surbharati publication, Varanasi 2018, uttarsthan adhyay 21, mukharogavidnyaniya shlok no 11-27, 412,413.
44. Sarth Vagbhat by Dr Ganesh Krushna Gadre, chaukhamba surbharati publication, Varanasi 2018, uttarsthan adhyay 23, shirorogavidnyaniya sholk no 12,13,14, 423.
45. Sarth Vagbhat by Dr Ganesh Krushna Gadre, chaukhamba surbharati publication, Varanasi 2018, uttarsthan adhyay 38, mushikalarkavishpratishedha, 473,474, 475.
46. Madhavanidanam of shri madhavakara with the sanskrit comm. Madukosa by vijayarakshit and srikanthdatta, chouxhambha surbharati prakashan varanasi, 2006; chapter 10, shlok no 2, 65.