

REVIEW ON AUSHADHA SEVEN KAAL IN AYURVEDA

1. Vd. SONAWANE SWATI SAMBHAJI

¹PG Scholar Rasashastra & Bhaishajyakalpana

2. VD. INAMDAR MAHESH PRABHAKAR

²HOD And PROFESSOR ,

Department Of Rasashastra & Bhaishajyakalpana

HON. SHRI. ANNASAHEB DANGE AYURVED MEDICAL COLLEGE, POST
GRADUATE & RESEARCH CENTER, ASHTA, TAL. WALWA DIST.SANGLI.

ABSTRACT

Ayurveda is a life science ,which deals with humans life . In ayurvedic chikista padhati Acharyas give lot of importants to Drugs as well as their matra and administration time. Aushadha Sevana Kala is the type of Avasthika Kala meant for the proper time of drug administration. Agni, being the supreme factor for maintaining Dhatu-samyata, (Dhatu Normalcy) all the therapies are directed to maintain and preserve the potency of Agni (digestive fire). The proper knowledge of Agni (digestive fire) and Aushadha Sevana Kala (time) will help in food and drug interaction which is helpful to attain a quick and sustainable relief to the patient. There are different Aushadha Sevanakala's (time) mentioned by acharyas and are collectively reviewed in this article. The main purpose of this article is to study different Aushadha Sevana Kala (time) in Ayurvedic literature in detail so that it is helpful in day to day practice.

Key words: Kala; Aushadha Sevankala ; Agani ; Charaka; Sushruta;
Ashtanga Hrudaya; Sharangadhara.

INTRODUCTION:

Drugs are given in less quantity they are not effective but if given in more quantity act as poison. We know that the Quantity of drugs (Matra) is very important simultaneously the timing for drug administration is also very important because when the drugs are given in right time potency of drugs is increase . In Ayurveda our Acharyas give importance to Aushadh Sevankala .

The aushadha (medicine) should be given in right time to get desired effect. If the aushadha (medicine) is not given properly according to it's Kala (time) then it will not be effective at all. When to intake the aushadha i.e. before or after or in between the meals or at night depends upon the disease and medicine itself. The basic knowledge of the concept of Aushadha Sevana Kala in day to day practice is very important to treat patients more accurately and easily.

Kala (time) is unique and specific causative factor of all type of effects, at the same time, it is unavoidable.^[1] That is why, Ayurveda being science of life, gives emphasis on the concept of Kala (time). Though, Kala (time) has relationship with all the effects, to prove it practically in the clinical aspect, the problem was undertaken. The Aushadha (medicine) and Kala (time) relation is explored in various shades by the ancient Acharyas. Acharya Vagbhata has stated that Kalo Bhaisajya Yoga Krt,^[11] which means Kala (time) fulfills the aim of administration of Aushadha (medicine). In accordance, Acharya Charaka says that Aushadha (medicine) given at appropriate Kala (time) is more efficacious than one given at inappropriate Kala. Optimum digestion and metabolism in a healthy individual is attributed to Agni (digestive fire). The hypo- activity of Agni (digestive fire) produces majority of disorders like Agnimandya, Jvara, Atisara and Grahani.^[12] So, the essence of all the therapeutic interventions is to re-establish, maintain and preserve the integrity of Agni (digestive fire). The Aushadha (medicine) is the means used by the physician to restore the transforming capacity of Agni (digestive fire). The rate of metabolism of Aushadha by Agni is affected by factors - food, type of Aushadha used, time of administration and Sariravastha (physical state of body). The stalwarts of Ayurveda have designed the Bhaisajya kala, in which food is predominantly used as a vehicle to achieve the expected therapeutic results.^[3] The Pancamahabhutas (five elements) are in a latent state of activity in Anna (food) and in Aushadha, they could be conceived to be in the dynamic phase. The sequence of food- Aushadha, by the choice of appropriate Bheshaja kala could be decided by a physician according to the Agni-

Aushadha interaction needed in a specific disease and diseased. The activity of Aushadha, anticipated by a physician is also determinantal in the choice Aushadha sevana Kala. For Rasayana (Rejuvenation therapy) purpose, the Agni - Aushadha interaction should stimulate the Agni at all levels - Jatharagni, Bhutagni and Dhatvagni. So, Acharya have advocated the Pratah niranna kala. When dipana dravya (drugs that stimulating digestive fire) is to be given in a patient of Agnimandya, augmentation of Jatharagni is achieved by the administration of Aushadha at the Madhyabhakta kala. Here localized Agni – Aushadha interaction is also facilitated due to Samana vayu association. Kala and Agni, both have been accorded the status of Parinamakara bhava by the Acharyas. Thus, a thorough knowledge of Agni - Bhaisajya interaction in the Bheshaja sevana Kala will help in the quick action, with reduced dose and for prolonged duration of the medication used. All kala depends upon the action of vata dosha. Pitta and Kapha dosha has got silent role amongst the kala because the moving property of drug is by the action of vata dosha. So Aushadha sevana kala are very important in Chikitsa (treatment) of Rogi (patient).

AIMS AND OBJECTIVES:

1. To study the Aushadha Sevana Kala in various Ayurvedic texts.
2. To understand the concept behind the Aushadha Sevana Kala in detail.

MATERIAL AND METHODS:

Only Ayurvedic textual materials have been used for this study, from which various references have been collected. Mainly used books in the studies are Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya and available commentaries on these Samhitas.

LITERATURE REVIEW :

The Pancamahabhutas (five elements) are in a latent state of activity in Anna (food) and in Aushadha, they could be conceived to be in the dynamic phase. The sequence of food-Aushadha, by the choice of appropriate Bheshaja kala could be decided by a physician according

to the Agni-Aushadha interaction needed in a specific disease and diseased. The activity of Aushadha, anticipated by a physician is also determinantal in the choice Aushadha sevana Kala. For Rasayana (Rejuvenation therapy) purpose, the Agni - Aushadha interaction should stimulate the Agni at all levels - Jatharagni, Bhutagni and Dhatvagni. So, Acharya have advocated the Pratah niranna kala. When dipana dravya (drugs that stimulating digestive fire) is to be given in a patient of Agnimandya, augmentation of Jatharagni is achieved by the administration of Aushadha at the Madhyabhakta kala. Here localized Agni – Aushadha interaction is also facilitated due to Samana vayu association. Kala and Agni, both have been accorded the status of Parinamakara bhava by the Acharyas. Thus, a thorough knowledge of Agni - Bhaisajya interaction in the Bhesaja sevana Kala will help in the quick action, with reduced dose and for prolonged duration of the medication used.^[3] All kala depends upon the action of vata dosha. Pitta and Kapha dosha has got silent role amongst the kala because the moving property of drug is by the action of vata dosha. So Aushadha sevana kala are very important in Chikitsa (treatment) of Rogi (patient).

The general knowledge of Aushadha sevana kala is elaborated in the following Samhitas .

1. Charaka Samhita Chikitsa – Yoni vyapat chikitsa Adhyaya.
2. Sushruta Samhita Uttara tantra –Swasthavritta Adhyaya.
3. Astanga Hridaya Sutrasthana –Doshopkramaniya Adhyaya.

Classification of Kala and its importance in disease management as follows. As per various Samhitakara , Aushadha Sevana Kala (time) have been classified as below:

Charaka	10
Sushruta	10
Sharangdhara	05
Ashtanga Hrudya	10
Ashtanga Sangraha	11

1. Abhakta (Niranna kala / Empty stomach) -

It is Indicated in Kapha Vikaras (Kaphaja disease), Balwana (strong) patients, Pitta / KaphaVruddhi (increase) and for intaking Vamana-Virechana Aushadhas.

Veerya Shakti of Aushadha will be good and unchanged enough in Abhakta kala, because it does not gets mixed with food. Aushadha should be administered in empty stomach. All the commentators unanimously agree that Aushadha should not be given with food i.e. they should not be mixed, in this Kala. Hemadri only specifies that once the food consumed is digested, Aushadha should be given and after its digestion, food should be given i.e. it should be given in empty stomach. Indu adds that Aushadha given 2 hours after sunrise in the morning is niranna kala.

Aushadh Seven Kala	Administration Of Time	Indication	Contraindication
Abhakta	Before taking any food on empty stomach	Lekhanartha and Utklishta Kaphapitta kapha udreka avastha gata kala.	-Children women aged peoples who cannot withstand the potency of thr medicine, administrated in the kala. - Persons of soft body consuming medicine in this manner become tired and loose strength also .

2. Pragbhakta (Before Meal) -

Pragbhakta means before meal. It is indicated in Apana Vayu Vikruti, Adha (lower) Kaya (body) Vikaras (Disease), Meda (fat).

Administering the drugs before meals is the appropriate kala for Aushadha intake. There is no difference of opinion regarding this kala, aushadha is to be given before meals. Hemadri comments that aushadha intake should be immediately followed by food.

Aushadh Seven Kala	Administration Of Time	Indication
Pragbhakta	Before Meal(atleast before 10-30 min.so that medicine can absorbed)	-Apana vata vikruti gudagat vata (situated in anus), Children , AGED , Krisha , Bhiru . -For strnthaning lower part

		of body .disease of lower half of body . -Obesity
--	--	--

3. Madhyabhakta (In between meals) -

It is mentioned for samana vayu vikara, koshta gata vikaras (Disease), Paittika Vikaras (disease),and in diseases related with Agni and Strotorodhanashak.Aushadha is administered in between meals. Cakrapani and Indu specify that after half of food is consumed Aushadha should be given again followed by the remaining half of food.

Aushadh Seven Kala	Administration Of Time	Indication
Madhyabhakta	In between meals	-Samana vata vikruti -Koshtagata vyadhis -Pittapradhan vyadhis -Agni udeeranartha in mandagni

4. Adhobhakta :-

I) PratahPashchadbhakta (after Lunch)-

It is indicated in Vyana Vayu Vikara, Ura – Urdhva jatrugata, Bala (strength) Vruddhikara (increase) Aushadha Sevana, Kapha Dosha Janya Vyadhi, Pushti (strength) janya Aushadhi Sevana – Sarvottam Kala

II) SayanPashchadbhakta:- (after dinner) -

It is Indicated in Udana Vayu Vikruti (disease), Ura Sthangata Kasa – Shwasagata Vyadhi. Kala after meals is the Adhobhakta Kala, both after lunch and dinner. Cakrapani reminds of both morning and evening time after meals. Indu and Hemadri add to the above by quoting that immediately after meals is the time of medicine intake.

Aushadh Seven Kala	Administration Of Time	Indication
Adhobhakta	After food	-Vyana vayu vikruti - For strengthening upper part of the body -Disease of chest , Throat and head

		-Disease of upper half body
--	--	-----------------------------

5. Muhurmuh (frequently administered) -

It is indicated in Shwasa, Kasa, Hikka, Chhardi, Vishbadha, Pipasa Vikara. Frequent administration of Aushadha regardless of Bhukta or Abuktavastha is Muhurmuhu Kala. Except for Chakrapani, all are of the opinion that Aushadha should be given irrespective of meals.

Aushadh Seven Kala	Administration Of Time	Indication
Muhurmuh	frequently administered	-Shwasa (Dyspnea), -Kasa(Cough), -Trisha (Thirst), -Hikka(Hiccups), -Chhardi(Vomiting), -Visha(Poison), -Swarabhanga(Hoarseness of voice).

6. Samudga (Before Meal and after meal)

Samudga means before and after food. Food taken should be Laghu (light). It is indicated in Hikka, Kampa, Aakshepaka and Adha (lower) kaya (body) vikara (disease), Vyana and Apana Vayu Vikruti. Aushadha is administered at the time immediate before and after meals. All commentators are unanimous about Samudga Kala i.e. Aushadha to be given before and after meals. Indu and Hemadri specify that Aushadha should be consumed immediately in relation to food.

Aushadh Seven Kala	Administration Of Time	Indication
Samudga	Before Meal and after meal	Hikka , Kampa (Tremors),Akshepa(convulsions), -Urdhva kyangara vikara .

7. Sabhakta (mixed with food)

It is indicated in SukumaraVyakti, Bala (Child), Aruchikara (bitter), Aushadha, Sarvangata (whole body) Vikara. Aushadha is given mixed with food in this Kala. Except for Indu, all the commentators agree that Aushadha should be consumed along with food. Indu specifies that Aushadha is processed or cooked along with food or it is given along with food.

Aushadh Seven Kala	Administration Of Time	Indication
Sabhakta	mixed with food	-Aruchi - Children , AGED , Krisha , Bhiru . -people who hate taking medicine -To protect bala and sarvangagata rogas.

8. Sagraasa (with each and every morsel of food)

It is indicated in prana Vayu Dushtijanya Vikara (Respiratory diseases), Hrudroga, Dipana, Vajikara Aushadhi. Sagraasa means with each and every morsel of food, aushadha is given.

Aushadh Seven Kala	Administration Of Time	Indication
Sagraasa	with each and every morsel of food	-Indicated in prana vata dhushti -Vajeekaranartha (increasing vigor) -Agani sandeepanartha

9. Grasantare (in between two morsel of food)

It is indicated in Prana Vayu janya Vikara (Respiratory Diseases), Prana Vayu Prakopavastha. Grasantare means Kala in between two morsels, is meant for Aushadha intake.

Aushadh Seven Kala	Administration Of Time	Indication
Grasantare	In between two morsel of food	-Indicated in prana vata dhushti -Vajeekaranartha (increasing vigor) -Agani sandeepanartha

10. Nisha (Before sleep)

It is indicated in Urdhwajatrugata Vikara (disease), Vamana, Dhumapana. Nisha Kala of medicine administration, is after digestion of food consumed; Indu specifies the exact Nisha Kala is the time after the evening meal has digested and 3 hours have been passed.^[5]

Aushadh Seven Kala	Administration Of Time	Indication
Nisha	Before sleep	Urdhwajatrugata vikara(disease above the head)

11. Antarbhakta (after digestion of meal in noon)

It is indicated in Diptagni Vikara (diseases) and Vata Dosha Janya Vikara (disease). Appropriate Kala for Aushadha intake is Madhyanha, when the previous food consumed is digested and after Aushadha is metabolised, again food is to be taken in the evening.^[5]

Aushadh Seven Kala	Administration of Time	Indication
Antarbhakta	after digestion of meal in noon	-Hridya , Deepaka ,Deepatagni purush suffering from vyana vayu -It acts over udana vayu , which is seated in Hridaya , it gives strength to the manas (mind).

DISCUSSION :-

Vaidyas largely accepted the nomenclature described by Acharya Charaka.^[1] The ancient texts of Ayurveda have described 10 types of Aushadha Sevana Kalas (time). The texts differ about the nomenclature of Aushadha Sevana Kalas (time).^[3]

In Niranna Kala the aushadha is administered in empty stomach. Agni and Aushadha interaction is unobstructed because of absence of food. Agni (digestive fire) should be Pradipta (increased) for this Kala

Table 1: Types of Kalas as per Samhitas :-

Charaka - chi. 30/296	Ashtanga Hrudaya - Su.13/37	Ashtanga Sangraha – Su. 23/12	Sushruta – Uttara 64	Sharangadhara – Purva 2/11-12
Bhuktadau	Abhakta	Abhakta	Abhakta	Suryodayatah
Bhuktamadh ye	Pragbhakta	Pragbhakta	Pragbhakta	Divasabhojane a) BhojanaPurva b) Sagra c) Bhojana Madhya d) BhojanaPashc hat
Bhuktapaschat a) after lunch (pratah) b) after dinner (sayam)	Madhyabhakt a	Madhyabhakta	Madhyabhakt a	Sayambhojane a) Grasantare/Gr ase b) Bhojanapashc hat
Pratah	pashchadbha kta	Adhobhakta	Adhobhakta	Muhurm uhu
Bhaktasanyu kta	Nishi	Samabhakta	Sabhakta	Nishi
Muhurmuhu	Muhurmuhu	Antarabhakta	Antarabhakta	
Samudga	Samudga	Muhurmuhu	Muhurmuhu	
Niranna	Sabhakta	Samudga	Samudga	
Sagra	Sagra	Sagra sa	Gr asa	
Grasantara	Grasantara	Grasantara	Grasantara	
		Nishi		

Table 2: AushadhaSevana Kala :-

Sr. No.	Aushadha Sevana Kala	Indications
1.	Bhuktadau	Apana vikruti
2.	Bhuktamadhye	Samana vikruti
3.	Bhuktapaschat a) after lunch (pratah) b) after dinner (sayam)	Vyana-udana vikruti
4.	Pratah	Balwanarugna
5.	Bhaktasanyukta	Aruchi
6.	Muhurmuhu	Shwasakasa Trishna
7.	Samudga	Hikka

8.	Niranna	Durbalarugna
9.	Sagra	Pranavayu vikruti
10.	Grasantara	Pranavayu vikriti

Table 3: Aushadhi Sevana Kala

Sr. No.	AushadhaSevana Kala	Indications
1	Abhakta	Sukumar, bala, vriddha
2	Pragbhakta	Bala, vriddha, sukumar
3	Madhyabhakta	Koshtha gatvyadhi
4	Adhobhakta	Urdhva sharigata vyadhi Balya
5	Sabhakta	Mano balvardhaka, deepana
6	Antarabhakta	-----
7	Muhurmuhu	Hikka, shwasa, kasa, vaman
8	Samudga	Urdhvagami and adhogami dosha
9	Grasa	Vajikarana
10.	Grasantara	Mandagni

Table 4: AushadhiSevana Kala :-

Sr. No.	AushadhaSevana Kala	Indications
1.	Abhakta	Healthy person
2.	Pragbhakta	Apanavikruti, obesity
3.	Madhyabhakta	Samanavikruti, kosthagataroga, Pittajaroga
4.	Adhobhakta	Urdhvajatrugataroga
5.	Samabhakta	Sarvagavyadhi
6.	Antarabhakta	Vyanavyadhi
7.	Muhurmuhu	Hikkashwasa, kasa, trusha, chhardi, Vishaktata.
8.	Samudga	Hikka, kampa, aakshepa Urdhwa / Adhaparshwa vyadhi

9.	Sagrasa	Prana vayu vikruti vajikarana
10.	Grasantara	Pranavayu vikriti, hrudroga
11.	Nishi	Urdhva jatru gata vyadhi, vaman, dhumapana

Table 5: AushadhiSevana Kala :-

S r. N o.	AushadhaSevana Kala	Indi catio ns
1.	Suryodayajatah	Pitta / kaphajavyadhi, Virechana Vamana Lekhana
2.	Divasabhojane a) BhojanaPurva b) Sagrasa c) Bhojana Madhya d) BhojanaPashchat	Apana vikruti Aruch i Sama na vikruti Vyana vikruti
3.	Sayambhojane a) Grasantare/Grase b) Bhojanapashchat	Udana vikruti Pranava yu vikruti
4.	Muhurmuhu	Urdhvajatrugata roga
5.	Nishi	Sarvaga vyadhi

In Pragbhakta Kala aushadhi should be administered before meal followed by food so there is no Balakshaya and no expulsion of food due to Urdhwagni Pratibandha. In Madhyabhata Kala, aushadhi administered in between meals so it acts on Samana Vayu and Pachaka Pitta in

Koshtha. It acts locally due to Urdhwagati and Adhogati restriction. In Adhobhakta Kala, aushadhi administered after meals (after lunch and dinner) Aushadhi is to be administered immediate after meals. In Vyanavayu vikruti after lunch and in Udanavayu vikruti (disease) after dinner so that the aushadhi stimulates the Vyana vayu and Udanavayu respectively. In Antarbhakta Kala, the food which is taken is digested and then the Aushadhi taken and when Aushadhi is metabolized then again food is taken in evening, in this Kala due to madhyana i.e. Pittakala, Agni (digestive fire), is in a stimulated condition so, Aushadhi is properly metabolized in this Kala. In Sabhakta Kala aushadhi is given mixed with the food to potentiate Agni-Bala the aushadhi is mixed with Rasdhatu and spreads all over the body through Gati hence useful in Sarvangatvyadhi. In Samudga Kala aushadhi is administered immediately before and after the food, aushadhi acts as a Samudga for ahara, it promotes Urdhva and Adhogati of the drug and helps in correcting gativikruti of Vata Dosha by promoting anulomana of Vatadosha. In Muhurmuhu Kala, aushadhi is frequently administered and treats the vitiated doshas in their Sanchaya and Vegavastha. In Grasa Kala the aushadhi is given with each and every morsel of food so that it facilitates absorption of drug from buccal mucosa. Grasa Kala aushadhi stimulates the Pranavayu so Indriyaprasadana and chittaprasadana takes place. In Grasantara Kala aushadhi is given between two morsels of food so that helps in correcting Vatadoshavikruti. In Nisha Kala aushadhi is given after digestion of food (after 3 Hours passed), in this condition the selective action of aushadhi towards Urdhvajatrugata vikara because the Adha-gati of drug is prevented by food.

CONCLUSION

Aushadha Sevana Kala is the time of administration of Bhesaja (Karana). Oral route is preferred. According to Ayurvedic literature Aushadha Sevana Kala (Time) are ten. It is to be decided by the Karana (Bhisak) in an effort towards the establishment of Dhatu Samya. Numbers of Aushadha Sevana Kala are ten as per Caraka, Susruta, Astangahrdaya. Eleven are described in Astangas Samgraha and Sarangdhara has condensed the Aushadha Sevana Kala into five. Aushadha Sevana Kala was meant for Samana purpose and not to be advocated in emergency conditions. Bhasajya Parinamakara Bhavas could be Agni (digestive fire), Vayu, Kala (Time) and Samyoga. The rate of metabolism of Bhesaja by Agni (digestive

fire) is controlled by food with the aid of proper Aushadha Sevana Kala (Time) helps in treating the patients easily. Majority of Aushadha Sevana Kala are described in relation to food. This is the conceptual study and has its own limitations. Yet researches should be conducted to study on the topic Aushadha Sevana Kala (Time).

REFERENCES

1. Vidyadharshulka, RavidattaTripathi, editors. Charaka.Charaka Samhita (Vaidyamanorama Hindi Commentary), Vol. II. 20th ed. Varanasi: Chaukhambha Sanskrit Prakashan; 1994. Chikitsa sthana, 30/296. p. 880.
2. Sushruta. Sushruta Samhita (Susruta vimarsa Hindi commentary), Vol. II. Anantram Sharma, editor. 1st ed. Varanasi: Chaukhambha Surbharati Prakashan; 2004. Uttara tantra, 64/65. p. 570.
3. Vagbhata. Ashtanga Sangraha. Ravidatta Tripathi, editor. 1st ed. Varanasi: Chaukhamba Sanskrit Pratishithan; 2001. Sutrasthanam, 23/12. p. 428.
4. Sharangdhara. Sharangdhara Samhita. Brahmananda Tripathi, editor. 2nd ed. Varanasi: Chaukhambha Sanskrit Prakashan; 2006. Purvakhanda, 2/1-12. p. 24.
5. Vagbhata. Astanga hrdayam (Nirnala Hindi Commentary). TripathiBrahmananda, editor. 2nd ed. Varanasi: Chowkhamba Surbharati Prakashan; Sutrasthanam, 13/37.p.190.
6. Charaka. Charaka Samhita (Vaidyamanorama Hindi Commentary), Vol. II. Vidyadhar Shulka, Ravidatta Tripathi, editors. 20th ed. Varanasi: Chaukhambha Sanskrit Prakashan; 1994. Chikitsa sthana, 30/296.p. 881-882.
7. Sushruta. Sushruta Samhita (Susrutavimarsa Hindi commentary), Vol. II. Anantram Sharma, editor. 1st ed. Varanasi: Chaukhambha Surbharati Prakashan; 2004. Uttartantra, 64/65. p. 571-572.
8. Vagbhata. Astanga hrdayam (Nirnala Hindi Commentary). Brahmananda Tripathi, editor. 2nd ed. Varanasi: Chowkhamba Surbharati Prakashan; Sutra sthanam, 13/37.p.190-191.
9. Vagbhata. Ashtanga Sangraha. Ravidatta Tripathi, editor. 1st ed. Varanasi: Chaukhamba Sanskrit Pratishithan; 2001. Sutra sthana, 23/12. p. 428.

10. Sharangdhara. Sharangdhara Samhita. Brahmananda Tripathi, editor. 2nd ed. Varanasi: Chaukhambha Sanskrit Prakashan; 2006. Purvakhanda, 2/1-12. p. 23-24.
11. Vagbhata. Ashtanga Sangraha. Ravidatta Tripathi, editor. 1st ed. Varanasi: Chaukhamba Sanskrit Pratishthan; 2001. Sutra sthana, 1/45. p.10.
12. Charaka. Charaka Samhita (Vaidyamanorama Hindi Commentary), Vol. II. Vidyadhar Shulka, Ravidatta Tripathi, editors. 20th ed. Varanasi: Chaukhambha Sanskrit Prakashan; 1994. Chikitsa sthana, 14/244. p.547.
13. Sharangdhara. Sharangdhara Samhita. Brahmananda Tripathi, editor. 2nd ed. Varanasi: Chaukhambha Sanskrit Prakashan; 2006. Purvakhanda, 5/43. p. 60.
14. Abhinav Bhaishajya Vigyana .Acharya Sidhinandan Mishra, Chaukhamba Surbharti Prakashana ,Varanasi. 2012.
15. Rasa-Bhaishajyakalpaba Vigyana. Vd. Santosh Kumar Sharma “Khandal”, Publication Scheme Eleventh Edition 2013 .
16. Dravyagunavigyana .Dr. Deshpande ,Dr. Jawalgekar , A.R.Nandurkar , Edition 2012. Bhaishajyakaal 36/p.366-70
17. https://wjpr.net/admin/assets/article_issue/1505551009.
18. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3764882/>