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ROLE OF PANCHAKARMA AND RASAYANA IN COMBATING PANDEMICS – A PREVENTIVE ASPECT

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ABSTRACT

As the world is suffering from pandemic COVID-19. People are losing their lives all around the globe. The maximum mortality in this crisis is found in people who are immunocompromised, aged, suffering from respiratory and metabolic disorders. The pandemic in Ayurveda is mainly explained in Charak Samhita Viman Sthana under Janpadodhwansniya Adhyaya. The management part of Janpadodhwansa includes early collection of medicines before outbreak of pandemic, Rasayana (Rejuvenation therapy) Panchakarma therapy. The collection of required medicines, medical equipment, testing kits etc. before outbreak is very important to combat a pandemic and its importance is self-explanatory. Panchakarma and

Rasayana therapies are capable of both preventing as well as curing diseases. In present scenario their preventive aspect may be very useful to deal with such pandemic situation. Our immune system plays a vital role in combating pandemic like COVID-19. Ayurveda has explained the immune response of the body through Vyadhikshamatva Bala or Ojas. Ojas plays an important role in maintaining many vital functions of the body, physical, mental and spiritual health of individual. In the present review article, an attempt has been made to analyse the effect of Panchakarma and Rasayana in maintaining state of good health and boosting immune system, thus preventing pandemic like COVID-19.

KEYWORDS: Ayurveda, COVID-19, Preventive aspect, Ojas, Ritushodhana.

1. INTRODUCTION

Presently the world is dealing with pandemic COVID-19 and mortality rate is found high in people who are immunocompromised.^[1] This impairment in immune system is not present merely from birth but it is self-acquired by the humans. Due to Mithya Aahar-Vihaar (faulty lifestyle ~ dietary habits and daily regimen) and Pragyaaparadha (~ self-ignorance) one develops lifestyle disorders like diabetes mellitus, hypertension etc. and thus poor immune system. In Ayurveda lots of literature are available about maintenance of a healthy lifestyle and immune system which is mainly included under Dinacharya (daily regimen), Ritucharya (seasonal regimen), Rasayana (rejuvenation therapy), Yoga, Pranayama and Panchakarma.

Rasayana is a rejuvenation therapy explained in Ayurveda having multiple benefits like improving immune system and thus is beneficial in combating pandemics. For better results the use of Rasayana therapy is advised only after Shodhana processes of Panchakarma. Panchakarma consist of five holistic approaches including Vamana, Virechana, Anuvasana Basti, Niruh Basti and Nasya. This therapy is very useful for detoxifying body and maintaining equilibrium of vitiated Dosha by its Shamana and Shodhana effect.

The Panchakarma and Rasayana are also mentioned in management part of Janpadodhwansa. So, role of these two therapies of Ayurveda as preventive aspect in improving immune system of the body and thus combating pandemics like COVID-19 may be vital.

2. METHODS - OBJECTIVES

- **2.1.** To review the literature of Panchakarma and Rasayana in preventive aspect to combat pandemics.
- **2.2.** To highlight the importance of Panchakarma, Ritushodhana in maintaining health and use of Rasayana after Sanshodhana for immunity boosting.

3. RESULTS OF REVIEW OF LITERATURE

3.1. Janpadodhwansa: As explained in Charak Samhita, Janpadodhwansa meaning Pandemic is mainly caused by Vikruti (disturbance) in four factors - Vayu (Air), Jala (Water), Desha (Place) and Kaala (Time factor). The main reason of this disturbance is Adharma meaning wrongdoing (immorality, cruelty or inconsiderate behaviour of humans towards nature). The Yoni (main source) of this Adharma is Pragyaaparadha. In Pragyaaparadha there is impairment in Dhi (intellect or wisdom), Dhriti (patience or retention power) and Smriti

(memory) of individuals.^[3] In case of COVID-19 there was Vikruti of Desha, as it originated from a single part of world. Later with time there was spread of novel corona virus across different countries of world and COVID-19 was announced as pandemic by W.H.O.^[4]

3.2. Panchakarma

Panchakarma is integral part of Ayurveda as it fulfils both main aims of Ayurveda. Panchakarma is mainly explained in Charak Samhita Siddhi Sthana and Sushruta Samhita Chikitsa Sthana chapter 30-40. Panchakarma plays a role not only in curing diseased person but also in prevention of diseases by maintaining state of health. Basically, Panchakarma therapy is divided into 3 major Karma (procedures) these are Purvakarma (Pre-procedural care), Pradhana Karma (major procedure) and Pashchata Karma (Post-procedural care).

3.2.1 Purva-Karma: Purva-Karma are pre-purification measures done before major Panchakarma procedures. There are three main types of Purva-Karma- Pachana, Snehana and Swedana. Pachana is an important Purva-Karma done before the procedures like Vamana and Virechana for the Pachana (digestion) of Ama or toxic elements present in the body. It is done with the help of drugs like Panchakola, Trikatu etc depending upon the Prakruti and Amavastha of individuals. Snehana is oleation therapy used for both external (Abhyanga or massage) and internal oleation of the body with the help of medicated oils. The Snehana lubricates the Srotas (channels) present in body and induces the body tissues to give up their accumulated toxins. Swedana (sudation) which is also a Purva-Karma helps in liquefaction of these toxins and bring them to the Koshtha or nearest place from where they can be eliminated from the body easily by major Panchakarma procedures.

3.2.2 Pradhana Karma: The Pradhana Karma consist of 5 major Karma- Vamana, Virechana, Anuvasana Basti, Niruh Basti and Nasya. In all these Panchakarma procedures there is elimination of aggravated Dosha or toxins from nearest possible route of the body. Vamana is therapeutic vomiting or emesis which is usually administered for Kapha related disorders. In Vamana, Dosha Nirharana (elimination) of aggravated Kapha Dosha or toxins takes place through Urdhva Bhaga i.e. through Mukha or oral route. Virechana is therapeutic purgation mainly used to treat Pitta Dosha related disorders. Virechana detoxify body by removing aggravated Pitta and toxins through rectal route by acting on small intestine mainly. Basti mainly used to treat Vata related disorders. Basti acts on Pakvashaya (large intestine) which is Sthana of Vata and removes toxins through rectal route. There are two major types of Basti- Niruha (contains mainly Kwath or decoction) and Anuvasana (contains oil mainly).

The fifth and last major procedure under Panchakarma is Nasya. In Nasya, the drug administration and removal of toxins takes place through nasal route. Nasya is mainly used to treat Urdhva Jatrugata (disorders above clavicle), Vatakaphaja Vikara. According to Acharya Charak, the Nasya is of five types viz. Navana, Avapeeda, Dhmapana, Dhuma and Pratimarsha. Navana is further divided in to Snehana and Shodhana, Avapeeda into Shodhana and Stambhana, Dhuma into Prayogika, Vairechanika and Snaihika while Pratimarsha is divided into Snehana and Shodhana. Vamana and Virechana together are called Sanshodhana because of their capability to remove aggravated Dosha or toxins out from the body.

Depending upon their types Basti and Nasya are known to do both works i.e. Sanshamana (pacify Dosha or toxins inside the body) and Shodhana (remove Dosha out of the body).

3.2.3 Pashchata Karma: Pashchata Karma are the post procedural cares that are done to nourish the body and Agni which has gone weaker after Pradhana Karma like Vamana and Virechana. To fulfil this purpose Sansarjana Krama like Peyadi, Tarpanadi, Rasadi Sansarjana Krama are used. After the process of Shodhana we can also use Rasayana, Vajeekaran, Sanshamna Chikitsa to enhance their therapeutic effect.

3.3 Importance of Panchakarma

Importance of Panchakarma can be described under three aspects: -

- 1. Preventive aspect Panchakarma in Swastha (healthy individual)
- 2. Promotive aspect For Rasayanadi Guna Prapti
- 3. Curative aspect Panchakarma in curing diseases
- **3.3.1 Preventive aspect of Panchakarma:** The preventive aspect Panchakarma may be applied as part of Dinacharya, Ritucharya and in the management of Vegavadharana Janya Roga. Abhyanga, Snehana, Nasya (Pratimarsha), Matra Basti, Karna Poorana etc may be included in Dincharya according to specific seasons. The major part of preventive aspect of Panchakarma is Ritushodhana. Acharya Charak gave the importance of Shodhana in Swatha and stated that Shodhana is capable of removing aggravated Doshas or toxins out from the body, it pacifies diseases, increase strength and Varna or complexion of the individual. This preventive aspect is very important in maintaining healthy state and in avoiding Dosha Prakopa Janya Diseases.

3.3.1.1 Concept of Ritushodhana: The preventive aspect of Panchakarma mainly includes Ritushodhna, In Ayurveda there is concept of Dosha Chaya (Accumulation), Prakopa (Vitiation/ Aggravation) and Prashamana (Palliation or Auto Pacification) according to Ritu or seasons. Mithya or Doshprakopaka Aahar-Vihaar during Dosh Prakopaka Ritu may aggravate concerned Dosha and thus there is no auto pacification or Prashamna process. This leads to production of diseases related to Prakupita Dosha and simultaneously a state of Oja Kshaya (low immunity) is also there which may promote secondary infections like SARS-CoV-2 virus infection. To deal with this situation and maintaining state of health, detoxification of the body and removal of aggravated Dosha out of the body is needed. The Vamana, Virechana and Basti procedures are mentioned for this purpose during Vasanta, Sharad and Pravrit Ritu respectively. [8]

3.3.2 Promotive aspect of Panchakarma: The use of Rasayana and Vajeekarna drugs is mentioned as Pashchata Karma after major Panchakarma procedure. That means Panchakarma therapy can be used as Purva Karma for Swasthya Urjashara Chikitsa. Acharya Sushruta stated that Shodhana (detoxification) of the body is essential before the administration of Rasayana Therapy. Just as a dirty cloth does not take up any new colour or dye similarly when Srotas or channels in our body are not clean i.e. filled with vitiated Dosha or toxins, maximum benefits of Rasayana therapy cannot be achieved. ^[9] Thus, after Shodhana process of Panchakarma body is purified and fit for the use of Rasayana therapy.

Acharya Vagbhatt also explained the importance of Shodhana before Rasayana therapy. He stated that Srotoshodhana (cleaning of channels) helps in attainment of proper Rasayana effects in addition to this it also gives clarity to intellect and strength to senses. There is formation of stable Dhatus and increase in Agni (digestive power). This also delays ageing process and thus man can live a healthy and long life.^[10]

3.3.3. Curative aspect of Panchakarma: Panchakarma is also used as major treatment part in many diseases. Vata, Pitta, Kapha dominant diseases are treated mainly with Basti, Virechana, Vamana respectively. In Vata-Kapha dominant Urdhva-Jatrugata diseases, Nasya is the procedure of choice. Acharya Charak highlighted benefits and importance of Panchakarma Sanshodhan i.e. Vamana and Virechana therapy separately in Bahudoshavastha i.e. state of vitiated or increased Doshas in the body. He quoted diseases like Apachna, Aruchi, Sathulta, Panduta, Gaurava, Pidika, Kotha, Kandu etc under Bahudoshavastha and stated to plan Vamana and Virechana according to Bala and Dosha of these diseases.^[11]

3.3.3.1. Benefits of Sanshodhan: After Sanshodhan, the body and Kostha becomes free from toxins so the Kaya-Agni or Jathragni (digestive power) is increased and improved, diseases are cured and Doshas are balanced, sense organs works properly. The man gets immunity, strength and fertility by Samyak Sanshodhan. There is delay in aging and man can live healthy and long life. Acharaya Charak also claimed that by treating aggravated Dosha with the help of Sanshamana Chikitsa (use of internal medicines or by fasting techniques) there may be reoccurrence of aggravation of Doshas in future but when we purify or clean our body with the help of Sanshodhana therapy there is no reoccurrence. To understand this concept, he gave example that as a plant can survive and grow again when its roots are left uncut in similar way when the aggravated Doshas and toxins are not removed from the body, it can aggravate again. So, by Sanshodhana Dosha gets treated from the root so there is no aggravation again. [12]

3.4. Rasayana

Rasayana is holistic Rejuvenation therapy explained in Ayurvedic texts which plays an important role in nourishing and strengthening of human body. In Charak Samhita, the Rasayana concept is described in Chikitsa Sthan first chapter- the Rasayana Adhyaya. This chapter is divided into four Pada or parts and total 63 Rasayana Yoga (preparations) are mentioned in these four Padas along with their uses. The word Rasayana is made up of two separate words Rasa and Ayanam. Although there are different meanings of Rasa in Ayurveda but in context of Rasayana it means the essence of the end product of digestion which is called Rasa Dhatu (mostly correlated to plasma or lymphatic fluids or circulating fluids) and "Ayanam" means path or channels by which Rasa reaches the targeted body tissues. Thus, Rasayana facilitates assimilation and circulation of Rasa Dhatu which is responsible for nourishing Uttarottar (succeeding) Dhatu. As Ojas is Saara (end essence) of all seven Dhatu's present inside the body, it is responsible for providing immunity and resistance against diseases. Its production, maintenance, storage, utilization and proper circulation inside body must be consistent and proportionate.

- **3.4.1. Definition of Rasayana:** The means through which one attains highest quality of Rasa and other Dhatu is called as Rasayana.^[13]
- **3.4.2. Classification of Rasayana:** To achieve preventive, promotive and curative aspects of health, the Rasayana is classified based on method, purpose at which the Rasayana therapy is carried out. Based on place and method of its use Rasayana, it is classified into two categories

by Acharya Charak- first Vata-Atapika and second Kutipraveshika.^[14] On the basis of purpose there are three types of Rasayana; Kamya, Ajasrika and Naimittika Rasayana.

- **3.4.2.1. Vata-Atapika**: There is no requirement of special place and no restrictions from day to day activities to use this form of Rasayana. In this type, the exposure to outside environment is allowed and any person can follow it. For example, "Chyavanaprasha" is used as a Rasayana for children or adult daily once or twice to improve immunity and strength.
- **3.4.2.2. Kutipravesika**: In this type of Rasayana, a three segmented room (Trigarbh-Kuti) is the place where three walled huts are made specifically for this purpose. There is no influence of heat and light in this closed and conditioned dark room. This type is comparatively more effective than Vata-Atapika Rasayana method but is difficult to perform and supervision of physician is necessary for this method of Rasayana.
- **3.4.2.3. Kamya**: meaning of Kamya is to achieve some specific desire or purpose. As suggested by the name Kamya Rasayana is used for different purposes like for improving longevity (Ayushya) or enhance brain function (Medhya), to slow down the ageing process (Vayasthapana), to improve the function of body tissues (Dhathu and its channels) and improving sensory functions. This is more towards promotive aspect of health.
- **3.4.2.4. Ajasrika**: These are the Rasayana which can be a part of our day to day lifestyle. These can be used regularly for improving general health and immunity of individuals, for example use of milk, Ghee or any potential medicines to keep the person healthy and defend against various ailments. In this way the Rasayana under Kamya and Ajasrika can be very useful towards promotive and preventive aspect of health. These are very potential in increasing Ojas or Bala of individuals and thus helpful in combating pandemic like COVID-19.
- **3.4.2.5. Naimittika**: This type of Rasayana is used for treatment of diseases by using specific formulations. This is definitely the curative aspect of Rasayana Chikitsa. For example, use of Agastya Rasayana in chronic respiratory disorders is a Naimittika type of Rasayana.
- **3.4.3. Benefits of rasayana therapy:** Acharya Charak in Chikitsa Sthana Rasayanadhyaya-Abhyamlakiyam Rasayanapadam explained importance and benefits of Rasayana therapy. Rasayana and Vajeekarana both the therapies are capable of preventing as well as curing diseases. Both therapies promote health by their Ojas Karma (increases strength and

immunity) and Vrishya (improves fertility) effects.^[15] Benefits of Rasayana includes longevity, strong memory and retention power. It further helps in attaining good health, youthfulness, lustre, enhanced complexion and voice. Rasayana provides strength to the body and sense organs and skin gets glowing with health.^[16]

3.5. Immunity (Vyadhikshmatva/ Ojas/Bala) and Rasayana

- **3.5.1. Vyadhikshmatva:** The word Vyadhi-Kshamatva, Ojas, Bala are often correlated to immunity. Vyadhikshmatva is comprised of two words first Vyadhi which means disease and second Kshamatva meaning capacity to defend against diseases. The quality of the Dhatu produced in the body determines the intensity of Vyadhi-Kshamatva. If the Dhatu are weak, the ability to defend against diseases will be low and the person will soon develop disease. Once the disease has developed and the immunity becomes further low and therefore the intensity of the disease increases. The person is also prone to develop some secondary infections and it becomes difficult to cure disease within an expected time.
- **3.5.2. Bala** (Strength); The word "Bala" means strength. This can be of two types- the physical, mental strength and the strength of the body to defend against diseases. The optimum strength of Dhatu is responsible for the Bala of a person. There are three types of Bala explained by Acharya Vagbhatt- Sahaja Bala, Kalaja Bala and Yuktikrita-Bala. [17] The natural strength and immunity present from birth is known as Sahaja-Bala, and the strength or immunity of a person according to the influence of season, age time etc is referred as Kalaja-Bala. The strength that is achieved by Yukti or wisdom, through logical selection of appropriate food, sleep, control of sexual urges and use of Rasayana is known as "Yuktikrita-Bala". Thus, Rasayana can play a vital role in achieving Yuktikrita-Bala and thus improving strength and immunity of the body.
- **3.5.3 The Concept of Ojas:** The Ojas is the essence present in every Dhatu (tissue) and is the collective Sara (nectar) of all the Dhatu from Rasa upto Shukra. Ojas is mainly responsible for strength, immunity and vitality of life. According to Acharya Sushruta Ojas is the Param-Teja of the Sapta Dhatu and as the Bala (biological strength) of an individual.^[18]

There is a known comparison that Ojas remains present in body just as the Ghee is present in milk itself. As being cumulated at every Dhatu level the Ojas is highly nutritive, extreme purest and finest Sara part of Sneha. Ojas is widespread in body and represents Bala, Veerya, Prana, Prakriti and Kapha of body. Ojas and Bala in body shares the cause effect relationship

where Ojas is cause and Bala or strength being the ultimate effect of it. There are two major types of Ojas -1. Para Ojas and 2. Apara Ojas. [19] Para Ojas is refined in nature and resides in heart. It is in very minute in quantity measuring only eight drops while Apara Ojas is widespread in body and its quantity is half an Anjali. These two types of Ojas, are responsible for different functions in body. Para Ojas is vital for life and any injury or diminution in its volume may lead to instantaneous death whereas Apara Ojas is responsible for overall immunity of the body.

4. DISCUSSION

In Janpadodhwansa like COVID-19 role of immunity and good health plays a vital role in preventive aspect. Panchakarma therapy mainly Ritushodhana purifies the body by removing the toxins and aggravated Dosha from the body in specific season. Thus, there is state of balanced Dosha and good health throughout the year. In Ritushodhana there are three major Panchakarma procedures- Vamana, Virechana, Basti. Before these major Karma, Purva-Karma like Snehana and Swedana are done to bring aggravated Dosha and toxins from whole body to Koshtha so that they can be removed out of our body through nearest route by major Panchakarma procedure. Vamana drugs possesses properties like Ushna, Teekshna, Sukshma, Vyavayi and Vikasi and they work by Prabhava or Swavirya. After their intake during major process firstly they reach Hrudya and from there through various Dhamani reaches all the micro and macro channels in the body by their Vyavayi and Vikasi properties. They act on aggravated Dosha and toxins, through Agneya property which the liquifies the complex called as Dosha Sanghata. The Teekshna Guna breaks the complex into smaller particles called Vicchindanti. This small and liquified matter travels through unctuous and smooth channels towards the Koshtha and the action takes place through Anuprabhavat. After entering the Amashaya, Udana Vayu acts upon them as the Vamaka drugs have dominance of Agni and Vayu Mahabhuta. The Vamaka Dravya through their Prabhava (special power) move upwards and finally are expelled out through oral cavity. [20] Virechana Dravya have many properties similar to Vamaka Dravya. Prithivi and Jala Mahabhuta are dominant in Virechana drugs and are responsible for Adhogati (downward movement) of Dosha The Apana Vayu further helps in removal of these aggravated Doshas and toxins through rectal route. Due to wide spectrum range of Basti Chikitsa, Acharya Charak called it as Ardha Chikitsa. It is capable of pacifying all the Dosha, but it is best management for Prakupita Vata. Although Basti is given through rectal route and mainly reaches Pakvashya but through its systemic action it can remove Dosha and toxins from the whole body. Acharya Sushruta stated that Veerya (active principle) of Basti spreads in entire body and thus is capable of removing, pacifying aggravated Dosha and toxins of whole body. Rasayana therapy can be used in both preventive and curative aspect. In dealing with Pandemic like COVID-19 its preventive aspect is very important. In preventive aspect Rasayana therapy works mainly upon the principle of building good immunity in individual. Rasayana improves Kaya-Agni or Jatharagni of individuals and helps in formation of stable Rasadi Dhatu mainly Rasa and ultimately there is nourishment of Ojas which is end essence of all the Dhatu and is responsible for immune responses of the body. Rasayana falling under Kamya, Ajasrika category are capable of achieve above said goal. So, these Rasayana should be used after Sanshodhana therapy or Ritushodhna of Panchakarma to attain maximum benefits.

5. CONCLUSION

In case if we will be supposed to live life with Pandemics like COVID-19, there is no better preventive option than Ayurveda in present scenario. Panchakarma and Rasayana are two very important therapies of Ayurveda that are helpful in providing healthy, disease free and long life to the individuals. Panchakarma, Ritushodhana eliminates aggravated Dosha and toxins out from the body and purifies the body according to season. The Rasayana provides superior quality of Rasadi Dhatu, Ojas and improves immunity on individuals. Thus, to live a healthy life, Ritushodhana and Rasayana should be a part of our lifestyle.

6. REFERENCES

- 1. W.H.O. COVID-19 Situation Report, 2020; 46: 06.
- 2. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 1(2): 568.
- 3. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 1(2): 693.
- 4. W.H.O. COVID-19 Situation Report, 2020; 51: 11.
- 5. Kaviraj Dr. Ambika Dutt Shastry, Dalhan tika, Sushruta Samhita of Acharya Sushruta, Chowkhamba Sanskrit series, 1954; 15: 1.
- 6. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 2(2): 877.
- 7. Kaviraj Dr. Ambika Dutt Shastry, Sushruta Samhita of Acharya Sushruta, Chowkhamba Sanskrit series, 1954; 21: 2.

- 8. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 1(2): 656-657.
- 9. Kaviraj Dr. Ambika Dutt Shastry, Sushruta Samhita of Acharya Sushruta, Chowkhamba Sanskrit series, 1954; 1(2): 112.
- 10. Dr. Brahmanand Tripathi, Ashtanga Hridya of Acharya Vagbhatt, reprint edition, Chowkhamba Sanskrit Pratishthan, 2014; 228.
- 11. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 250.
- 12. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 1(2): 251-252p.
- 13. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 2(2): 5.
- 14. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 2: 7.
- 15. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 4.
- 16. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak vol II, 2nd edition, Chaukhamba Sanskrit Pratisthan, 2011; 2(2): 5.
- 17. Srikantha Murthy KR, Ashtanga Hridaya of Acharya Vagbhata, reprint edition, Chaukhamba Krishnadas Academy, Shareer sthan, 2003; 3-77.
- 18. Kaviraj Dr. Ambika Dutt Shastry, Sushruta Samhita of Acharya Sushruta, Chowkhamba Sanskrit series, 1954; 2: 61.
- 19. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Chakrapani tika, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 1(2): 266.
- 20. Acharya Vidyadhar Shukla, Ravi Dutt Tripathi, Charak Samhita of Acharya Charak Chaukhamba Sanskrit Pratisthan, 2011; 2(2): 806.
- 21. Kaviraj Dr. Ambika Dutt Shastry, Sushruta Samhita of Acharya Sushruta, Chowkhamba Sanskrit series, 1954; 2: 142.