

## Dosha-Dushya Sammurchana in Vatarakta: A Comparative View with Gout Pathophysiology

Bhardwaj H<sup>1\*</sup>, Kashish<sup>2</sup>, Saini S<sup>3</sup>

DOI:10.21760/jaims.10.8.29


<sup>1\*</sup> Harsh Bhardwaj, Post Graduate Scholar Final Year, Dept of Rog Nidan Evam Vikriti Vigyan, Rajiv Gandhi Government Post Graduate Ayurvedic College and Hospital, Paprola, Distt Kangra, Himachal Pradesh, India.

<sup>2</sup> Kashish, Post Graduate Scholar Final Year, Dept of Rog Nidan Evam Vikriti Vigyan, Rajiv Gandhi Government Post Graduate Ayurvedic College and Hospital, Paprola, Distt Kangra, Himachal Pradesh, India.

<sup>3</sup> Swapnil Saini, Reader, Dept of Rog Nidan Evam Vikriti Vigyan, Rajiv Gandhi Government Post Graduate Ayurvedic College and Hospital, Paprola, Distt Kangra, Himachal Pradesh, India.

Health is an intricate concept that encompasses physical, physiological, mental, emotional, spiritual, and social well-being, all of which are deeply affected by dietary and lifestyle choices. Ayurvedic texts consistently highlight the vital importance of Ahara (diet) and Vihara (lifestyle) in maintaining Swasthya (health) and Vikara (diseases). This focus is particularly pertinent today, in light of the notable increase in metabolic disorders related to lifestyle. According to Ayurveda, Vatarakta is a disease that involves an imbalance of Vata Dosha that affects Rakta Dhatu. The Vata, whose pathways are impeded by Rakta, is further vitiated, contaminating the Rakta or blood. Vatarakta is a profound Vatavyadhi produced by Avarana (occlusion) disease. Vatarakta have two Avasthas i.e., Uttana and Gambhira. Uttana Vatarakta affects Twacha and Mamsa Dhatu whereas Gambhira mainly affects Asthi, Majjasi Gambhira Dhatu. One of the best and most significant methods for determining a disease's causes, prognosis, and diagnosis is Nidan Panchak. The five parts of Nidan Panchak are Purvarupa, Rupa, Upshaya, Samprapti, and Nidan. The primary and crucial diagnostic technique in Ayurveda is the Nidana Panchak. The symptoms of gout are very similar to those described in Vatarakta. Gout is a common type of arthritis caused by uric acid disruption, in which excess uric acid in the bloodstream forms crystals in the joint, causing acute pain, swelling, and stiffness. Different Ayurveda texts, journals, research papers, articles are referred to study the concept of Vatarakta and its usefulness in manifestation and sequelae of the Vatarakta.

**Keywords:** Ayurveda, Vatarakta, Uttana and Gambhira, Gouty arthritis

Corresponding Author	How to Cite this Article	To Browse
Harsh Bhardwaj, Post Graduate Scholar Final Year, Dept of Rog Nidan Evam Vikriti Vigyan, Rajiv Gandhi Government Post Graduate Ayurvedic College and Hospital, Paprola, Distt Kangra, Himachal Pradesh, India. Email: <a href="mailto:bhardwajharsh64@gmail.com">bhardwajharsh64@gmail.com</a>	Bhardwaj H, Kashish, Saini S, <a href="#">Dosha-Dushya Sammurchana in Vatarakta: A Comparative View with Gout Pathophysiology</a> . J Ayu Int Med Sci. 2025;10(8):177-183. Available From <a href="https://jaims.in/jaims/article/view/4658/">https://jaims.in/jaims/article/view/4658/</a>	

**Manuscript Received**  
2025-06-16

**Review Round 1**  
2025-06-25

**Review Round 2**  
2025-07-05

**Review Round 3**  
2025-07-15

**Accepted**  
2025-07-25

**Conflict of Interest**  
None

**Funding**  
Nil

**Ethical Approval**  
Not required

**Plagiarism X-checker**  
12.36

**Note**



© 2025 by Bhardwaj H, Kashish, Saini S and Published by Maharshi Charaka Ayurveda Organization. This is an Open Access article licensed under a Creative Commons Attribution 4.0 International License <https://creativecommons.org/licenses/by/4.0/> unported [CC BY 4.0].



## Introduction

*Vata* & *Rakta* are two words that make up term *Vatarakta*. Vitiated *Vata* & *Rakta* generated multiple health illnesses & most important of them is *Vatarakta*. *Vatarakta* is disease explained in *Ayurveda* involving *Vata Dosha* imbalance affecting *Rakta dhatu*. It is one of significant illnesses that is well-described in classical *Ayurvedic* literature. Among key signs of this illness is *Sandhi-Shoola* especially big toes. Patients with *Vatarakta* experience pain as major symptom that affects their daily routine.

### **Charaka Samhita (2000 B.C.)[1]:**

*Vatashonitachikitsam*, 29th chapter of *Chikitsa Sthana*, explains *Vatarakta*. As *Bahya* & *Abhyantara*, such as *Shodhana*, *Shamanaas*, & *Rasayana*, information about disease included *Nidana*, *Samprapti*, *Bheda*, *Upadrava*, *Sadhyaasadhyatva*, *Pathya-Apathya*, & *Chikitsa Sutra* & *Chikitsa*. *Vatarakta* was treated with *Shilajatu*, *Eranda*, *Sneha*, *Lepas*, *Ghritha*, *Kashaya*, *Guggulu*, *Tailas*, & so on. few surgical techniques are also mentioned in addition to medical treatment, such as *Rakta-Visravana* (blood-letting) performed by *Siravedh*, *Shring*, *Jalauka*, & *Suchior Alabu Yantra*.

### **Sushruta Samhita (1000-1500 B.C.)[2]:**

Regarding its types, *Sushruta Samhita* has a different interpretation of *Vatarakta*. According to this, the *Uttana* and *Avagadha Vatarakta* are its *Avasthavishesh* rather than the illness's types. A detailed description of every facet of the disease can be found in the first chapter of *Vatavyadhi Nidan Sthana* and the fifth chapter of *Mahavatavyadhi Chikitsa Sthana* of the *Sushruta Samhita*.

### **Ashtanga Samgraha (400 A.D) / Ashtanga Hridaya (500 A.D)[3]:**

Detailed explanation of *Nidana*, *Samprapti*, *Bheda*, *Upadrava*, *Sadhya-asadhyatva*, *Pathya-Apathya*, *Chikitsa sutra*, & *Chikitsa* is available in *Ashtanga Samgraha* (*Vatashonita Nidana Adyaya*) & *Ashtanga Hridaya* (*Vatashonita Nidana Adyaya*, 16th & 24th chapters, respectively). Moreover, *Ashtanga Hridaya* has included administration of *Sama* & *Nirama* stages of *Vatarakta*.

### **Madhava Nidan (800 A. D.)[4]:**

*Madhava* in chapter 23 of "*Vatarakta Nidanam*",

Explains in detail of *Vatarakta Nidana*, *Samprapti*, *Purvarupa*, *Upadrava*, and *Asadhya lakshana*.

### **Synonyms of Vatarakta[5]**

In *Charaka Samhita*, *Acharya Charaka* gave synonyms for *Vatarakta* and they are: *Vatarakta*, *Khudda vata*, *Vatabalasa* and *Adhyavata* etc. *Adhyavata*, *Khudavata* and *Vatabalas* are the usually used to refer the illness of *Vatarakta* based on clinical occurrence, anatomical side and severity of disease whereas *Acharya Charaka* explained *Vatarakta* as *Vatashonoita* also.

### **Nidana Panchaka of Vatarakta**

The knowledge of the disease is obtained by the study of *Nidana*, *Purvarupa*, *Rupa*, *Samprapti* and *Upashaya*, which are termed as *Nidana Panchaka*.

### **Nidana of Vatarakta**

*Ayurvedic* texts describe the different *Nidana* of *Vatarakta*. The elements that disrupt the active state of *Dosha* balance and exacerbate the condition are commonly referred to as *Nidana*. *Vata Dosha* and *Rakta Dhatu* are two main components of *Nidana* of *Vatarakta*. when this morbid *Rakta Dhatu* obstructs the vitiated *Vata Dosha* then *Vatarakta* is manifested Even though each has got its own aetiology, *Acharyas* while talking about *Vatarakta* have clubbed the etiological factors together and explained. the etiological factors, or causes, of *Vata-Rakta* can be categorized as follows:

1. *Aharaja Nidana* - causes related to dietary habits (Excessive intake of *Snigdha*, *Ushna*, *Ruksha Aahar*. *Alpabhojan*, *Abhojan* etc).
2. *Viharaja Nidana* - causes related to various habitual and factors (*Mithya Vihara*, *Ativyayam*, *Vibhrama Achankramansheelata*).
3. *Mansika Nidana* - causes related to psychological factors (*Bhaya*, *Krodha*, *Irshya* etc).
4. *Agantuja Nidana* - Exogenous factors (*Abhighata*).
5. *Prakriti based Nidana* - Miscellaneous factors (obese, *Kapha-Medas Dushti* further adds up to the etiology of this disease. (Su.Ni.1/39-41)

### **Comprehensive study of all etiological factors**

#### **A. Factors that aggravate Rakta Dhatu**

- *Lavana*

- *Amla*
- *Katu*
- *Kshara*
- *Snigdha*
- *Ajeerna*
- *Anoop Mamsa*
- *Pinyaka*
- *Mulakam*
- *Kulathika*
- *Masha*
- *Nishpava*
- *Dadhi*
- *Shukta*
- *Takra*
- *Virudh-Adhyasana*
- *Krodh*
- *Divaswapana*
- *Prajagara*

#### B. Factors that aggravate Vata

- *Kashaya Katu Tikta Rasa*
- *Alpa Ruksh Aaharat Bhojna*
- *Hastyoaushttra Yaan*

#### Purvarupa of Vatarakta[6]

*Purvarupa*, these are the symptoms which are produced in body before the arrival of disease. These are as follows

- *Atisweda/Asweda*
- *Karshnyata*
- *Sparshgnatwa*
- *Kshate Atiruk*
- *Sandhi Shaithilya*
- *Alasya*
- *Sadana*
- *Pidakodgama*
- *Nisthoda*
- *Spurana*
- *Bhedana*

- *Gurutwa*
- *Supti*
- *Kandu*
- *Sandi Ruk*
- *Vaivarnya*
- *Mandalotpatti*
- *Sheetalata*
- *Osha*
- *Daha*
- *Sopha*
- *Twak Parushya*
- *Sira Dhamani Spandana*
- *Sakti Dourbalya*
- *Ati Slakshna Khara Sparsha*
- *Shrama*

#### Lakshana (Rupa) of Vatarakta[7]

The symptoms are characteristics manifestation which develops during the course of the disease. In *Charaka Samhita*, *Vatarakta* has been classified on the basis of *Dhatu* in two forms: (*Ch.Chi.* 29/12)

##### 1. Uttana Vatarakta

##### 2. Gambhira Vatarakta

On the other hand, *Acharya Sushruta* (*Su.Chi.* 5/3) contends that these are distinct stages, such as *Kushtha*, rather than types. It first impacts surface-level structures like *Twaka* and *Mamsa*, but eventually it transforms into *Gambhira*, which impacts deeper structures.

#### 1. Uttana Vatarakta (Ch.Chi.29/20)

- *Kandu* - Itching
- *Daha* - Burning sensation
- *Ruja* - Pain
- *Sira Ayama* - Dilatation of the vessels
- *Toda* - Pricking pain
- *Sphuranam* - Throbbing sensation
- *Uchana* - Contraction
- *Shyava Twaka* - Cyanosis of the skin
- *Rakta Twaka* - Reddish coloration of skin
- *Bheda* - Splitting type of pain

- *Gouravata* - Heaviness
- *Suptata* - Numbness

## 2. Gambhira Vatarakta (Ch.Chi.29/21)

- *Svayathu Stabdta* - Swelling, which is fixed
- *Svayathu Kathinya* - Swelling with indurations
- *Arti* - Deep pain
- *Shyavata* - Black discoloration
- *Tamra Twaka* - Coppery discoloration of skin
- *Daha* - Burning sensation
- *Toda* - Pricking sensation
- *Sphurana* - Throbbing sensation
- *Paakavaan* - Suppuration

## 3. Ubhayashrita Vatarakta (Ch.Chi.29/23)

When there is presence of symptoms of both *Uttana* as well as *Gambhira Vatarakta*, it is called as *Ubhayashrita Vatarakta*.

- *Ruja* - Pain
- *Vidaha* - Burning sensation
- *Sandhi-Asthi-Majja Chinndni* - Cutting like pain in *Sandhi-Asthi-Majja*
- *Angasya Vakrikarana* - Disfigurement of the joints
- *Khanjatwa* - Lameness
- *Pangutwa* - Paraplegia
- *Vatasya Sarva Shareera Charana* - Vitiated *Vata* moves all over the body.

### According to the predominance of Dosha

On the basis of *Doshavariation*, *Vatarakta* can be classified as follows

**1. Vataja Vatarakta:** *Ayama, Shoola, Sphurana, Toda, Shotha Shyavata*, change in color of *Shotha* and *Vridhhi* or *Hani, Ruksha*.

**2. Pittaja Vatarakta:** *Vidaha, Vedana, Murcha, Sweda Adhikya, Trishna Adhikya, Mada, Bhrama*

**3. Kaphaja Vatarakta:** *Staimitya, Gauravama, Sneha Snigdhata, Supti, Manda Vedana, Shitalta, Kandu*.

**4. Raktaja Vatarakta:** *Shwayathu, Atiruka, Toda, Tamra Varna, Chimchimayata, Snigdha Ruksha SamaAbhava, Kandu*.

**5. Dwandaj Vatarakta:** *Vata-Pittaja, Pitta-Kaphaja, Vata- Kaphaja*

**6. Sannipataja Vatarakta:** Mixed symptoms of *Vata, Pitta* and

### Samprapti[8]

The relation between the *Nidana* & *Dosha* vitiation and the manifestation of disease is known as *Samprapti*. According to *Acharya Charaka*, the pathogenesis of *Vatarakta* can be understood through two perspectives:

A) *Samanya Samprapti* (General pathogenesis) and  
B) *Vishishta Samprapti* (Specific pathogenesis).

In *Samanaya Samprapti*, causative factors which are responsible for vitiation of *Vata Dosha* and *Rakta Dhātu*, have been specified and the disease progression is explained in brief. (*Ch. Chi. 29/8-11*).

*Vishishta Samprapti* explains the pathogenesis of *Vatarakta* in a very detailed understanding of the pathogenesis of *Vatarakta*, including the nature of *Vata dosha, Rakta Dhātu*, and the channels (*Srotas*) involved in the disease.

### Samanaya Samprapti of Vatarakta[9]

There are specific general causal variables that lead to the vitiation of the *Vata* and *Rakta Doshas*. As was previously indicated under the etiological aspects, *Vatarakta* tends to arise in people with a fragile and sensitive body who follow poor eating and lifestyle habits when starts taking *Kashaya, Katu, Tikta Rasa*, consume *Alpa Aahara* or *Ruksha Aahara* or avoid food, become prone to *Vata-Vridhhi* (*Ch.Chi.29/8-11*). These elements cause the *Vata* and *Rakta Doshas* to worsen. Similarly, other human activities that cause *Vata* to become vitiated include frequent riding of horses, elephants, or camels, swimming, jumping, walking long distances on foot during the summer, excessive sexual activity, and suppressing natural urges like urinating or feces. *Vata Dosha* is vitiated by all of these acts. The *Vata* must travel down the channel of *Vridhhi Vata*, which is blocked by already vitiated *Rakta Dhātu*. The entire *Rakta* is vitiated by *vridhhi* and blocked *Vata*, which then takes the form of *Vatarakta*.

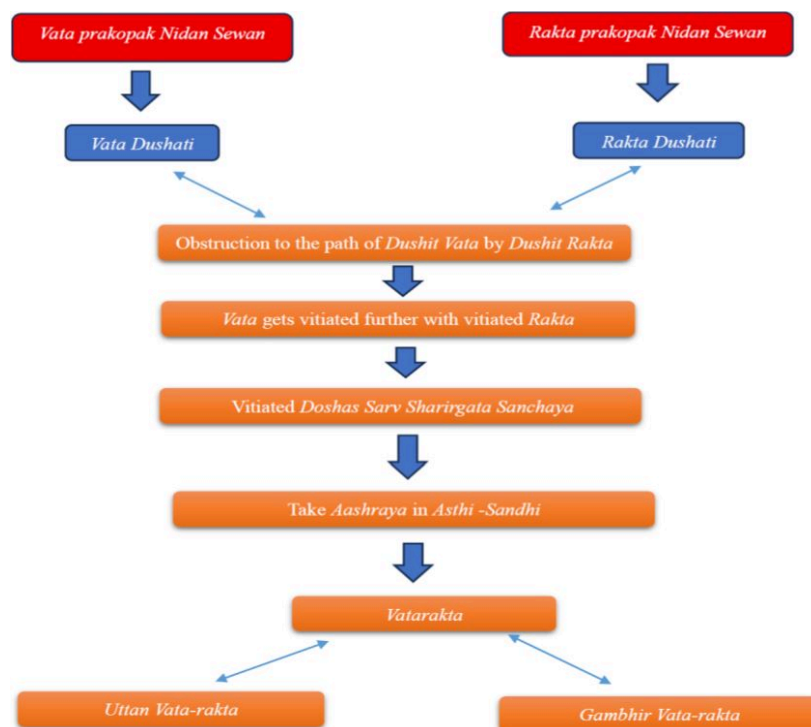
### Vishishta Samprapti of Vatarakta

In order to explain *Vishishta Samprapti*, *Acharya Charaka* proposed the theory that *Vata* is *Sukshma*,

Or subtle in nature, and has the capability to move in all of the body's joints and channels, while *Rakta* is *Drava* in nature and has the ability to flow in all of the body's *Srotas*. As a result, both vitiated *Vata* and *Rakta* travel quickly throughout the body's *Siramarga* (circulating channels), but as they pass through the joints, they become obstructed due to the complex anatomical structure of the joint. As a result, both *Vata* and *Rakta* become lodged in the joints, producing various pain sensations, each of which is caused by its association with either *Pitta* or *Kapha Dosha* (Ch.Chi.29/13-15). According to *Acharya Charaka* and *Acharya Sushruta*, *Vatarakta* (Gout) primarily affects the joints of the hands, feet, fingers, and other joints. The disease typically starts with an attack on the hands and feet and gradually spreads to other parts of the body. According to *Sushruta*, the expression of *Vatarakta* results from the combination of severely exacerbated *Vata*, which is exceedingly prominent, and vitiated *Rakta*.

*Acharya Charaka* proposes the hypothesis that *Vata* is *sukshma* (subtle) in character and has the ability to move in all of the body's joints and channels (*Srotas*) in order to explain the unique pathophysiology (*vishishtasamprapti*) of *Vatarakta*. However, *Rakta* is *Drava* (liquid) in nature and possesses the ability to flow through all of the body's *Srotas*. These innate characteristics cause vitiated *Vata* and *Rakta* to travel quickly through the body's *Sira Marga*, or circulation pathways. However, because of the joints' intricate anatomical structure, they confront obstacles as they come across joints. As a result, the vitiated or aggravated *Vata* and *Rakta* tend to accumulate in the joints, causing various types of pain sensations. The different types of pain sensations experienced in *Vatarakta* are attributed to the association of *Vata* and *Rakta* with either *Pitta* or *Kapha Dosha*. These *Doshas* influence the qualities and characteristics of pain experienced in joints affected by *Vatarakta*.

#### Schematic Representation of Samprapti



#### Sadhya-Asadhyata

The term "*Sadhya-Asadhyata*" or prognosis describes a disease's ability to be cured or treated. Three categories are used to classify the prognosis of *Vatarakta* (gout) according to several factors: -

- 1. Sadhya:** Nirupdrava, Ekadoshaja, Nava.
- 2. Yapy:** Dvidoshaja, Akritsnoupdrava, Samvatsa-rothitta.

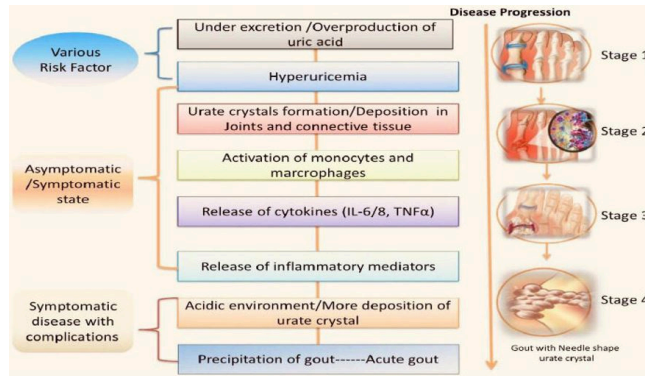
- 3. Asadhy:** Tridoshaja, Upadravayukta, Sravi, Vaivarnya, Stabdhatta, Arbuda, Samkocha, Indriya Santapa, Ajanu Sphutitama, Prabhinna, Prana-Kshaya, Mamsa- Kshaya, Moha.

#### Gout

Gout is a metabolic disease that most often affects middle-aged to elderly men and postmenopausal women.

It results from an increased body pool of urate with hyperuricemia. It typically is characterized by episodic acute arthritis or chronic arthritis caused by deposition of MSU crystals in joints and connective tissue tophi and the risk for deposition in kidney interstitium or uric acid nephrolithiasis.[10]

### Pathogenesis



### Clinical features[11]:

The classical presentation is with an acute monoarthritis, which affects the first MTP joint in over 50% of cases. Other common sites are the ankle, midfoot, knee, small joints of hands, wrist and elbow. The axial skeleton and large proximal joints are rarely involved. Typical features include:

- rapid onset, reaching maximum severity in 2–6 hours, worse in the early morning severe pain, often described as the 'worst pain ever'
- extreme tenderness, so the patient is unable to wear a sock or to let bedding rest on the joint
- marked swelling with overlying red,
- shiny skin self-limiting over 5–14 days, with complete resolution.
- During the attack, the joint shows signs of marked synovitis, swelling and erythema.

Historically, gout was refe. to as "disease of kings" or "rich man's disease" since it was thought to be a result of a rich food and a longer life expectancy.



Gout is also known as Podagra (seizing the foot) when it includes the big toe.

### Recurrent and chronic gout

- After an acute attack some people never have a second episode; in others the next episode occurs after years.
- In most, however, a second attack occurs within 1 year and the frequency of attacks gradually increases with time.
- Continued MSUM deposition causes joint damage and chronic pain.
- The interval between the first attack and the development of chronic symptoms is variable, but averages around 10 years.
- The main determinant is the serum uric acid level-the higher it is, the earlier and more extensive the development of joint damage and MSUM deposits.
- The joints most commonly involved with signs of damage and varying degrees of synovitis are: -
- First Metatarsophalangeal joint
- Midfoot
- Finger joints and wrists,
- Occasionally with severe deformity and marked functional impairment, especially of feet and hands.
- As with tophi, asymmetry is characteristic.

### Investigations[12]

- A biochemical screen, including renal function, uric acid, glucose and lipid profile, should be performed because of the association with metabolic syndrome.
- Hyperuricaemia is usually present in gout, but levels may be normal during an attack because serum urate falls during inflammation.
- Acute gout is characterised by an elevated ESR and CRP and with a neutrophilia, all of which return to normal as the attack subsides. Tophaceous gout may be accompanied by a modest but chronic elevation in ESR and CRP.
- X-rays are usually normal in acute gout, but well-demarcated erosions may be seen in patients with chronic or tophaceous gout. Tophi may also be visible on X-rays as soft tissue swellings.



## Discussion

*Vatarakta* is a disorder resulting from vitiation of both *Vata* and *Rakta*. Vitiating *Rakta* blocks aggravated *Vata*, exacerbating the problem. Aggravated *Vata* vitiates *Rakta*, causing complex effects on joints and resulting in *Vatarakta*. *Nidana* names include *Katu*, *Amla*, *Ushna*, *Vidahi Aahara* and *Gaja Ustrayaana*. It includes two stages: *Uttana* and *Gambhira*. *Uttana Vatarakta* mostly affects *Twaka* and *Mamsa*, while *Gambhira Vatarakta* affects *Asthi Dhatu* and distributes *Ruja* as *Aakhu Visha*.

## Conclusion

*Vatarakta* is a kind of *Vatavyadhi* that is linked to gouty arthritis. Lifestyle problems and poor dietary habits distinguish it from other diseases in that they are possibly preventable and can be alleviated by adopting appropriate food habits and lifestyles, as in the case of *Vatarakta*. *Hetus* are the underlying causes of a particular disease. *Acharyas* suggested various sorts of *Hetus* for different ailments. They are included in the *Nidanpanchak*. By avoiding the causative reasons for *Vatarakta* and following the *Pathyaapathya* prescribed by the *Ayurveda Acharyas*, one can overcome *Vatarakta* and live a healthy life. *Vatarakta* is a rare example of *Avarana Janya Vata Vyadhi*. *Vata* and *Rakta* are the primary *Doshas* engaged in *Vatarakta*.

## References

1. Shastri K, Chaturvedi G. Charaka Samhita. Chikitsa Sthana, 29/11. Vol. 2. Varanasi: Chaukhamba Bharati Academy; 2001. p. 820 [Crossref][PubMed][Google Scholar]
2. Shastri KA. Sushruta Samhita. Varanasi: Chaukhamba Sanskrit Sansthan; 2007. . [Crossref][PubMed][Google Scholar]
3. Gupta KA. Ashtanga Hridaya with Vidyotini Hindi Commentary. 14th ed. Varanasi: Chaukhamba Orientalia; 2003. [Crossref][PubMed][Google Scholar]
4. Tripathi BN. Madhava Nidana with Madhukosha Commentary. Vol. 1. Varanasi: Chaukhamba Surbharati Prakashan [Crossref][PubMed][Google Scholar]
5. Shukla AV, Tripathi RD. Charaka Samhita (Agnivesha). Parts 1 and 2. 2nd ed. Varanasi: [Crossref][PubMed][Google Scholar]
6. Savitri, [co-authors not provided]. Innovative Ayurvedic Vivechana of Vata-Rakta – A Conceptual Study. WJPMR. 2020;6(4):50-3. [Crossref][PubMed][Google Scholar]
7. Agnivesha. Charaka Samhita. Chikitsa Sthana, 29/11. Varanasi: Chaukhamba Sanskrit Sansthan; 2002. p. 984 [Crossref][PubMed][Google Scholar]
8. Agnivesha. Charaka Samhita. Sutra Sthana, 26:86-87. 4th ed. Varanasi: Chaukhamba Sanskrit Sansthan; 1994. p. 362 [Crossref][PubMed][Google Scholar]
9. Agnivesha. Charaka Samhita with Ayurveda Dipika Teeka. Varanasi: Chaukhamba Sanskrit Sansthan; 2000. p. 29 [Crossref][PubMed][Google Scholar]
10. Longo DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J. Harrison's Principles of Internal Medicine. 18th ed. New York: McGraw-Hill. [Crossref][PubMed][Google Scholar]
11. Walker BR, Colledge NR, Ralston SH, Penman ID. Davidson's Principles and Practice of Medicine. 20th ed. Edinburgh: Churchill Livingstone. [Crossref][PubMed][Google Scholar]
12. Walker BR, Colledge NR, Ralston SH, Penman ID. Davidson's Principles and Practice of Medicine. 20th ed. Edinburgh: Churchill Livingstone. [Crossref][PubMed][Google Scholar]

Disclaimer / Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of Journals and/or the editor(s). Journals and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.