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Panchabhoutika Nature of Rakta Dhatu: A Critical Review

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Abstract

Body is composed of three main components *Dosha*, *Dhatu* and *Mala*. Out of these, *Dhatu* are body tissues and one of their key functions is *dharana karma* (to hold everything together). In series seven *Dhatu*, *Rakta Dhatu* is at second place and gets derived from *Yakrita* (liver), *Pleeha* (spleen) and *Raktavahini dhamanya* (blood channels). As per *Panchabhoutiktva* principle everything in the universe is composed of five basic elements called *Akash* (ether), *Vayu* (air), *Teja* (fire), *Jala* (water), and *Prithvi* (earth). It is also stated that despite having *panchbhutas* (basic elements) objects show dominant features of one or two elements. *Rakta Dhatu* shows dominant features of *Teja* and *Jala*

Mahabhuta and is also associated with the *Pranayatana* (energy centers of the body). Flowing through body with help of *Vyana vayu* it becomes foundation of the living body. Physiological aspects of these aspects are important to understand keeping human health ahead. In general sense, this fluid nourishes all tissues and organs, traveling through the heart and blood vessels and maintaining color, complexion, *Mamsa dhatupushti* (muscle tissue nourishment), and *Jeevana* (life force) of living body. This article will thoroughly review the *Panchabhoutika* nature of *Rakta dhatu*.

Keywords: *Rakta Dhatu, Pranayatana, Panchabhoutiktva*

Introduction

Ayurveda therapy and guidelines have got global popularity for its holistic approach and result oriented therapeutic options. This picture arrived by faith of *ayurveda* adopters and dedication of thousands of *ayurveda* clinicians. Fundamental principles of *Ayurveda* and well elaborate physiology of basic elements of body are very essential steps while treating any patient. Day to day innovative and multidimensional *Ayurveda* clinical approach needs more simplicity of basic principles which can help them to deliver outcome based therapeutic services. *Dosha*, *Dhatu* and *Mala* are basic constituents which maintain body functions regular ^[1]. *Dhatu* are body tissues and hold everything together in body. *Rasa*, *Rakta*, *Mamsa*, *Meda*, *Asthi*, *Majja*, and *Shukra* ^[2] are seven *dhatu* which holds body in position. Knowing detailed physiological properties, functions and their constitutional factors like *Panchmahabhutika* aspects stood helpful for selection of drugs, diet and lifestyle in healthy as well as diseased individuals. *Rakta* is one of important *dhatu* which maintains color, complexion, *Mamsa dhatupushti* (muscle tissue nourishment), and *Jeevana* (life force). According to *Acharya Sushruta*, *Rakta dhatu* is the foundation of the living body and is essential for life, so it is important to understand all its aspects along with its *Panchabhoutika* nature thoroughly. The concept of *Panchabhoutiktva*, or the five elements, is a fundamental principle in *Ayurveda*. According to this, everything in the world is made up of five basic elements: *Akash* (ether), *Vayu* (air), *Teja* (fire), *Jala* (water), and *Prithvi* (earth). *Rakta Dhatu* consists of all five elements, but *Teja* and *Jala* are the primary ones. In this research article, we will closely review the *Panchabhoutika* nature of *Rakta dhatu* in detail. This study will be helpful for understanding physiological aspects of *Rakta dhatu* for healthy and non-healthy individuals.

Objectives

1. To review *panchabhoutika* nature of *Rakta dhatu* in detail.
2. To review how five elements aid *Rakta dhatu* as *pranayatana* according to *Ayurvedic* speculations as well as modern medicine.

Materials

Materials for this article were collected from ancient *Ayurvedic Samhitas* along with commentaries available from library of GAC Nanded. As well as various online topic related databases and articles are reviewed.

Methodology

- Selection of topic for article.
- Review of Literature study through standard books as well as online published research.
- Discussion on *panchabhoutika* nature of *Rakta dhatu*.
- Conclusion and result.

Review of literature

Vyutpatti & Nirukti of word Rakta: The word *Rakta* is derived from Sanskrit *dhatu -Ranja Karane Kta (Vachaspatyam), Raktam Kli (Ranjyatengamaneneti, Ranja+Kta) (Shabdakalpdruma). "Ranj,"* which means to color or dye, excite/glad/charm/delight, impact or move, is the source of the word "*Rakta*."

Synonyms

Asruka- The word *Asruka* is derived from "*Asu Kshepane*" *dhatu*; which means *vikshepana*, as it moves continuously all over the body named as *Asruka*.

Rudhira- The word *Rudhira* is derived from "*Runadhi Rudhyate Iti Va*"; which denotes *Dharana* and *Sanrakshan*. *Acharya Charaka*, has mentioned that the element which comprises *Prana*, is *Rudhira*.

Lohita- The word *Rohita* is derived from "*Ruh Rohini*" or "*Rudhyate*" and word *Lohita* is from "*Loha Sanjayate Asyam*" indicating the presence of *Loha* in it, hence named *Lohita*.

Shonita- The word *shonita* is taken from "*Shonah Sanjata Asya Iti Shonitam*". Red colored fluid means *shonit*.

Asra- The word is taken by "*Asra Dhatu with Rak Pratyaya*", It's meaning is like *Shonita* word.

Rakta- Basically *Rasa Dhatu* is colorless but when it changes into red colored liquid element, it is called *Rakta*.

Kshataja- When anyone gets injured, blood appears. The first element visible after injury is *Rakta*, so it is called *Kshataja*.

Formation of Rakta dhatu: *Rasa dhatu* is *aapya* & it is formed at the end of proper digestion of food. When *poshya rasa dhatu* travels from *Raktavaha srotas*; *dhatvagni* starts acting upon it; and after it reaches *Yakrit* and *Pleeha* it attains red color by influence of *Ranjaka Pitta* [3]. *Acharya Charaka* mentioned that when *Teja* part of *Ahararasa* and *Ranjaka pitta* along with *ushma* acts on *poshya Rasa*, it gets converted from colorless to red color. This is *Tejo-jalatmaka Rakta dhatu*. According to *Acharya Sharangdhara, Samana Vayu* helps *Rasa* to reach *Hridaya*. It gets digested there (*pachita*) and attains color (*ranjita*) to be converted as *Rakta dhatu*.

Sthana or location of Rakta dhatu: All seven *dhatu* are present in entire body; but there are some places or organs which are closely related to functions of specific *dhatu* or *dhatu* are present in large quantity. It is remarked as *sthana* of specific *dhatu*. Accordingly, *Yakrit* (liver), *Pleeha* (spleen) and *Raktavahi dhamanya* are location (*moola sthana*) of *Rakta dhatu* [4].

Raktavaha srotas: As said earlier *Yakrit* (liver), *Pleeha* (spleen) and *Raktavahi dhamanya* (blood vessels) are typical organs that play a crucial role in *Raktadhatu* [5]. Here,

conversion of *poshya rasa dhatu* into *Sthayi Rakta dhatu* takes place under the influence of *Rakta dhatvagni*.

Raktadhara Kala: *Raktadhara kala* is Second *kala* after *mamsadhara kala* which is situated inside *Yakrit* (liver), *Pleeha* (spleen) and *raktavahi dhamanya* (blood vessels). It is place for formation and storage of *Rakta Dhatu* [6]. *Raktashaya* (organ having blood storage) or controlling organs of this system are *yakrit* (liver) and *pleeha* (spleen).

Qualities of Rakta dhatu: *Shuddha Rakta* as having *Madhura, Lavana rasa, asamhata (drava), sama shitoshna*, a shade of *padma (lotus), indragopa, hema (gold)*, and blood of *avi* (sheep) and *shasha* (rabbit) according to *Acharya Vagbhat* [7].

Acharya Vriddha Vagbhata, mentioned *Shuddha Rakta* does not recolor fabrics after washing them. It resembles is like *Pitta* and is *Saumya-Agneya*. *Rakta dhatu* is *anushnashita* in nature means it is neither hot nor too cold. It is sweet, unctuous and red in color with smells familiar type of metallic smell. *Upadhatu* of *Rakta dhatu* are *Kandara* (ligaments) and *Sira* [8]. *Sira* supplies *Raktadhatu* to all tissues. *Mala* of *Rakta dhatu* is *Pitta*.

Quantity of Rakta dhatu: *Acharya Sushruta* did not mention any quantity of *dosha, dhatu* or *mala*. But according to *Acharya Vagbhata*, amount of *Rakta dhatu* is 8 *anjali*. Modern medicine says roughly amount of blood in person's body to be 5 liters.

Functions of Rakta dhatu: Primary function of *Rakta dhatu* is to sustain and nourish the body. It is responsible for formation and nourishment of next *Mamsa dhatu*. It gives lusters and color to skin [9]. As it is *Pranayatana*, it is mandatory for survival. In case of acute blood loss more than 10% or above it results in life threatening conditions.

Rakta sarata: *Dhatusarata*, is "excellence of a particular tissue", *dhatu's* superior characters. When a person has body with brilliance of *Rakta dhatu* he has warm body. Persons with *Uttama Rakta Dhatu Sarata* exhibit: reddish ears, eyes, oral pits, tongues, hands, soles, eyebrows, and penises. There is an amazing reddish luster to these organs. They are attractive and beautiful. They are uncomfortable in hot climate or for doing hard work. They receive wisdom, joy and magnificence [10].

Vishuddha rakta purusha: When the person has purest form of *Rakta Dhatu*, then following features are visible: Healthy complexion with lustier, active and energetic sense organs, proper digestion, healthy nourishment of body and unobstructed natural urges [11].

Rakta vriddhi (increase): When *Rakta dhatu* is vitiated by *dosha* and it increases (due to *guna* and *karma*), it produces signs and symptoms like the reddish complexion of the body and eyes, fullness of veins [12]. Increased *Rakta dhatu* also produces some dermatological disorders, cellulitis, boils, menorrhagia, burning sensation in mouth, eyes and rectum, abdominal growths, various types of abscesses, blackish discoloration of skin, blackening in front of eyes, reddish discoloration of eyes, decreased digestive fire, jaundice, peripheral vascular disease and other symptoms. Mostly these symptoms are also visible when *pitta dosha* is increased. Various symptoms like enlargement of the spleen, bleeding disorders, tooth and gum problems, jaundice, blackish spots on the face and loss of digestive fire.

Rakta Kshaya (decrease): Vitiated *dosha* when causes diminution (due to *guna* and *karma*) of *Rakta dosha*, there is roughness of skin, cracks in the skin, and dryness. There is craving for cold and sour things, collapsed veins and loss of

complexion is also visible [13]. The quantity of blood in blood vessels is reduced. *Acharya Sharangadhara* mentioned that when there is excessive loss of *Rakta dhatu*; it results in diminution of digestive fire and aggravation of *Vata dosha*. Some complications like blindness, dryness of skin, desire for sour and cool comforts arise due to this.

Rakta pradoshaja vikara: *Acharya Charaka* explained *Raktapradoshaja vikaras* at two different points in *Sutrasthana*, first at *Vidhishonitiya adhyaya* and again at *Vividhasitapitiya adhyaya*. *Acharya Susruta* mentioned them in *Vyadhi samuddeshheeya adhyaya* of *Sutra sthana*. They mostly include diseases seen due to vitiated *Pitta dosha* like dermatological disorders of different types *kushtha*, *visarpa*, *raktapitta*, *neelika*, *vidradhi*, *gudapaka* and so on [14].

Panchabhoutika Siddhant: It is a fundamental concept stating elemental composition of all substances (*dravya*). Each *dravya* either living or non-living, is made up of the five basic elements (*Pancha Mahabhutas*) - *Prithvi* (earth), *Aap* (water), *Teja* (fire), *Vayu* (air), and *Akasha* (ether). As everything in the universe is made up of five basic elements, so each human individual who is health concerned (*chikitsapurusha*) and each material which is being used as medicine (*dravyas*) are also composed of these five basic elements. According to this principle, everything in the world is made up of different compositions of all this *mahabhuta*; and so, *Rakta dhatu*. Ancient *Ayurvedic* literature predominantly mentioned quality present in *Rakta dhatu* because of each *mahabhuta* [15]. *Ayurveda* believes in treating deficient conditions by adding same property elements and treating opposite property element in growth condition. Therefore, aim of *Ayurveda* is fulfilled by this *Panchabhoutika Siddhant*.

<i>Mahabhuta</i>	Quality present in <i>Rakta dhatu</i> as per <i>mahabhuta</i>
<i>Akash</i> – Ether	<i>Laghuta</i> – Lightness
<i>Vayu</i> – Air	<i>Spandanam</i> – Rhythmic Pulsations
<i>Teja</i> – Fire	<i>Ragam</i> – Redness
<i>Jala</i> – Water	<i>Dravata</i> – Liquidity
<i>Prithvi</i> – Earth	<i>Visrata</i> – Peculiar Smell

Panchbhoutika nature of Rakta Dhatu: Though all the *mahabhuta* are responsible for formation of *Rakta dhatu* but *Teja* and *Jala mahabhuta* are more prominent.

Visrata: Meaning of word *visrata* in Sanskrit-English dictionary is given as musty, smell of raw meat, blood or fat. This *guna* present in *Rakta dhatu* is due to *Prithvi mahabhuta*. Only *Prithvi mahabhuta* has *Gandha* characteristics amongst all *panchmahabhutas*. In *Tarkasamgrah*, *Acharya Annambhatt* mentioned ‘*Tatra gandhavati prithvi*’ & ‘*ghragnagrahyo guno gandha / Prithvimatravrutti*’

The metallic smell of blood comes from iron molecules oxidizing when they meet oxygen or fat on the skin. When blood is exposed to oxygen in the air or reacts with fats (lipids) on the skin, the iron undergoes oxidation, releasing this characteristic metallic odor.

According to modern physiology, it can be illustrated that *Prithvi Mahabhuta* includes serum protein, hemoglobin, glucose etc.

Dravata: In Sanskrit-English dictionary, meaning of word *dravata* is natural or artificial fluid condition of a substance, fluidity, wetness. The *guna* is due to *Jala mahabhuta*. Characteristic of *Jala mahabhuta* is *dravatva* (flowing

nature). In *Tarkasamgrah*, *Acharya Annambhatt* mentioned ‘*Aadyasyandansamvayi karanam dravatvam*’ & *Sansiddhikam Jale* |’ *Jala Mahabhuta* include plasma, lipids etc. Plasma proteins are responsible for buffering action of blood.

Blood is a fluid with a property of liquidity due to its primary component, plasma, which is a water-based liquid that constitutes over half of the blood’s volume. Plasma contains dissolved substances like water, salts, proteins (albumin, globulins and fibrinogen), and hormones, which help it maintain its fluid state and acts as a transport medium for red blood cells, white blood cells and platelets throughout the body. While blood is thicker than water, its viscosity and liquidity are crucial for its ability to flow through blood vessels, maintain blood pressure and circulate nutrients and waste products.

Ragam: Meaning of word *ragam* in Sanskrit-English dictionary is given as the act of coloring or dyeing, color, red color, redness. This *guna* is due to *Teja mahabhuta*.

Human blood is red because its main component, hemoglobin, contains iron and is red when oxygenated. The color of the blood changes from bright red when carrying oxygen to a dark red when carrying less oxygen. Hemoglobin controls concentration of hydrogen ions concentration and hence acid base balance is maintained. Potassium, magnesium, iodine, chloride, acid phosphate, lipase, insulin etc. can be included in *Agni mahabhuta*. The main function of Insulin is allowing blood glucose molecules to enter the cell for energy.

Spandanam: Meaning of word *spandanam* in Sanskrit-English dictionary is given as pulsation, continuous rhythmic movement. This *guna* is due to *Vayu mahabhuta*.

Heart pumps blood throughout the body continuously from intrauterine life till death. Due to cardiac activity, pulsations are felt in arteries. When pulsations are felt in the artery present at the base of thumb, it is sign of life. If pulsations are present, it means person is alive. Oxygen and carbon dioxide gases can be included under *Vayu mahabhuta*. They are necessary for respiratory function.

Laghuta: Meaning of word *laghuta* in Sanskrit-English dictionary is given as light, quick, swift, active, prompt, and nimble. This *guna* is due to *Akash mahabhuta*.

As a result of *laghuta guna*, *Rakta dhatu* is quickly circulated all over the body. It helps to quick transport of oxygen and other nutrients to all organs, tissues and cells. Metabolic waste and excretory products are also swiftly transported to concerned organs which throw them out the body. Hence, body remains active.

Observations

In this article, *panchabhoutikva* of *Rakta Dhatu*, its relationship with other fundamentals like *dosha* (bioenergies) is realized. So, based on thorough knowledge and understanding of *panchabhoutika Siddhant*, one can understand the causative factors for *raktpradoshaj vikara* and thereby discover the solution for the treatment for it. *Rakta dhatu* is important components of the body both for physiological functions and in the pathogenesis of disease. Knowing its *Panchabhoutika* nature one can deal with issues related to it easily.

Discussion

In *Ayurveda*, it is assumed that *dosha* (bioenergies), *dhatu* (tissues) and *mala* (waste products) are the basic

components of living body. *Deha dharana* means maintenance of body is the primary function of *dhatu*. *Rakta dhatu* is of great physiological importance as *Acharya Sushruta* said that '*Raktam jeeva iti sthiti*' [16]. It is formed from *rasa dhatu* after action of *ranjaka pitta* and *rakta dhatvagni* when travelling through *rakatavaha srotas*. *Yakrit* (liver), *Pleeha* (spleen) and *Raktavahi dhamanya* are primary locations of *Rakta dhatu*. *Raktadhara kala* is Second *kala* after *mamsadhara kala*. '*Jeevana*' is basic function of it [17]. *Shuddha Rakta* as has *Madhura*, *Lavana* *rasatmaka*, *Asamhata* (*drava*.) *Sama Shitoshna*, a shade of *Padma* (*lotus*), *Indragopa*, *Hema* (*Gold*), and blood of *Avi* (*Sheep*) and *Shasha* (*rabbit*). If it gets vitiated by *dosha*, it shows symptoms of *vridhhi*, *kshaya* or *prakopa*. Though all the *mahabhuta* are responsible for its formation but *Teja* and *Jala mahabhuta* are more prominent. Each *mahabhuta* gives special quality to *Rakta dhatu*, thus helping to perform its functions swiftly. Peculiar odor (*visrata*), liquid nature (*dravata*), red color (*ragam*), rhythmic pulsation (*spandanam*) and lightness (*laghuta*) are special qualities present in it due to influence of *Prithvi*, *Jala*, *Teja*, *Vayu*, and *Akasha Mahabhuta*, respectively. These qualities aid *Rakta* to perform its functions effectively and understanding pathogenesis of diseases.

Clinical application of Panchabhoutika Siddhant

Three *dosha* (bio-energies) are composed of combination of *panchamahabhuta*. *Vata dosha* is made up of *Akasha* and *vayu mahabhuta*, *Pitta dosha* is made up of *Agni mahabhuta* and *Kapha dosha* is made up of *Jala* and *Prithvi mahabhuta*. If any *dosha* gets vitiated in the body and causes the disease, then that *dosha* can be normalized by giving the medicated *dravya*, *ahara* and *vihara* having same or opposite properties according to increase or decrease than the vitiated one. For example, if *Vata dosha* gets vitiated it can be treated by giving *Jala*, *Agni*, *Prithvi mahabhuta pradhan dravya*, *ahara* and *vihara* as they comprise opposite properties of *Vayu mahabhuta* in case of increase or *Aakash* and *Vayu mahabhuta pradhan dravya*, *ahara* and *vihara* in case of decrease. As per *Samanya-vishesh Siddhant*. In case of increase (*vruddhi*), one can use *vishesha dravya* (materials having opposite property) and in case of decrease (*kshaya*), one can use *samana Dravya* (materials having opposite properties) to achieve the equilibrium (*dhatuamyata*), the goal of *Ayurveda*. To fulfill this purpose, we must know the *panchabhoutika* composition of therapeutic substances.

Conclusions and Result

- *Panchabhoutika siddhanta* is an essential principle in *Ayurveda* as it is helpful in *Nidan* and *Chikitsa*, thereby fulfilling its aim of *dhatuamyata*.
- With proper knowledge of *Panchamahabhuta Siddhanta* one can pursue an appropriate way to approach a disease and hence be able to achieve the aim of *Ayurveda* which is preserving the health of a healthy and freeing the patient from his disease.
- *Rakta dhatu* is very crucial for maintaining life. So, it is needed to study *Rakta dhatu* in detail by all perspectives taken into consideration.
- *Acharya Sushruta* focuses on the importance of *Rakta dhatu* throughout *Sushruta Samhita* and purposely mentioned *panchabhoutika* nature of *Rakta dhatu* only.

- All five *mahabhuta* are synergically aid functioning of *Rakta* as gives *prana* to other *dhatu*, it as *ojovridhikara*, it is room for *prana*, hence it is *pranayatana*.
- The present review article also opens a new research window in the field of *Ayurveda's* fundamental research on this *panchabhoutika Siddhant*.

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