

Review Article

## An Evaluation of *Raktavaha Srotas Mula* W.S.R. to *Kamala Roga*: A Review

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### ABSTRACT

In *Ayurveda* the concept of *Srotas* are like roots of the tree. The human body is a conglomeration of the *Srotas* as per our classics. “*Srotas*” can be described as channels or passages where nutrition flows, interact and transfers. One of them being “*Raktavaha Srotas*” which stands for blood circulation in body starting from its formation to demise of its constituents. *Susruta* has narrated “*Yakrit*”, “*Pleeha*” and “*Raktavaha dhamanis*” as the *Mula* or root of origin for “*Raktavaha Srotas*” and one of the *Dusti Lakshanas* said by him is “*Kamala*”. “*Kamala Roga*” meaning yellowness of the *Twak*, *Netrata*, *Nakha* etc. caused by *Rakta Dusti* due to vitiation by *Pitta Dosha* can be correlated with Jaundice (hyperbilirubinemia) based on same *Lakshanas*. Normal level of serum bilirubin is 0.3-1.3 mg/dl. Jaundice becomes clinically evident when total serum bilirubin exceeds 2mg/dl. In modern science jaundice is classified into three types: Haemolytic, Obstructive & Hepatocellular. Jaundice occurs due to increased bilirubin production, decreased hepatic uptake, decreased hepatic conjugation, decreased excretion of bilirubin into bile and obstruction in intrahepatic or extrahepatic biliary circulation. Etiopathogenesis of several types of jaundice shows involvement of liver, spleen and hepatic portal system mainly, which throws light on concept of existence of *Mulas* for *Raktavaha Srotas* in human body, where origin or manifestation of its deviated states are seen. This study aims at evaluating “*Mula of Raktavaha Srotas* in term of *Kamala Roga*”.

**Keywords-** *Raktavaha Srotas*, *Kamala*, Jaundice, Liver, Spleen, Blood vessels.

### INTRODUCTION

*Ayurveda* has given a vivid description of the anatomy of the human in terms of *Dosha*, *Dhatu*, *Malas*, *Srotas*, *Kostha*, *Kostangas* etc. “*Srotas*” means “*Sravanat Srotansi*” which can be like exudation, oozing, filtration, to flow, to move etc. [1] *Srotas* are the inner transport system of the body which provides a platform for activities of another important biofactors like three doshas, seven dhatus etc. [2] *Acharyas*, *Charaka* has described 13

gross channels [2] while *Acharya Susruta* said 11 pairs of *Srotas*. [3] *Raktavaha Srotas* is one of them. It circulates the *Rakta Dhatu* to each part of the body for the nourishment of every tissue. All *Srotas* have their own *Mulasthanas* or root. *Chakrapani* mentioned *Mula Sthana* of *Srotas* as *Prabhavasthanas* means the anatomical seat of respective *Srotas*, the main seat of pathological changes, having diagnostic value or its be the focus of treatment. *Mula* of *Raktavaha Srotas* are *Yakrit* (liver), *Pleeha* (spleen) [2]

and *Raktavahi Dhamniya*.<sup>[3]</sup> According to *Acharya Susruta*, *Rakta* is responsible for the formation of *Pleeha* and *Yakrit*.<sup>[4]</sup> Intake of the *Vidahiannapana*, *Snigdhaaahar*, *Ushnadrava* along with exposure to excessive sunlight and air lead to *Raktavaha srotasdusti*.<sup>[5]</sup> If there is cut or piercing injury to *Mula Sthana* of *Raktavaha Srotas*, it causes cyanosis in the body parts, fever, burning sensation, pallor, hemorrhage.<sup>[3]</sup> The disease of the *Raktavaha Srotas* is *Kustha*, *Visrpa*, *Pidika*, *Kamala*, *Asrgdar*, *Arubuda*, *Arsa* etc.<sup>[6]</sup> *Kamala* is one of them which is characterized by *Haridra Twak*, *Nakh*, *Netra* due to increased *Pitta Dosha* in *Rakta Dhatu*.<sup>[7]</sup> In modern jaundice is also characterized by yellow pigmentation of skin, sclera, mucous membrane etc.

### AIM & OBJECTIVE

The aim of the present study is to establish the role and functional utility of *Srotomula* of *Raktavaha Srotas* w.s.r. to *Kamala*.

### MATERIALS AND METHODS

*Acharya Charak* has considered *Kamala* as advance stage of *Pandu Roga*. When person who suffers with *Pandu Roga* continues intake of *Pittaverdhak Ahar & Vihar* then he may develop *Kamala*.<sup>[8]</sup> *Susruta* has considered *Kamala* as separate disease and may be due to further complication of *Pandu Roga*,<sup>[9]</sup> whereas; *Vagbhat* has described *Kamala* as a separate disease.<sup>[10]</sup> In *Kamala* there is *Haaridra Netrata* (sclera becomes turmeric colored), *Harridra Twak* (skin becomes turmeric colored), *Harridra Nakha* (nails becomes turmeric colored), *Raktapeeta Mutrata* (bloody red or yellow color of the urine), *Raktapeetashakrut* (bloody red or yellow color of the faeces), *HataIndriyaha* (destruction of sense organs), *Daaha* (burning sensation), *Avipaaka* (indigestion), *Dourbalya* (weakness), *Sdana* (tiredness), *Aruchi* (anorexia), *Karshyata* (emaciation).<sup>[11]</sup> According to *Acharya Charak* *Kamala* is divided into two types- *Koshtaashrit* and *Shakhaashrit*.<sup>[12]</sup> In modern *Kamala* is

correlated with Jaundice due to resemblance their *Lakshna* and their *Mula* in which *Smrapati* occur. Jaundice may be defined as yellow pigmentation of skin, sclera by elevated level of bilirubin.<sup>[13]</sup> Bilirubin is produced by breakdown of senescent red blood cells and other hem containing protein like myoglobin, cytochrome etc. Normal bilirubin level is 0.3- 1.3mg/dl.<sup>[13]</sup> Bilirubin metabolism occurs in spleen, blood vessels, liver. When there is disease of spleen, liver, blood vessels then metabolism of bilirubin is hampered, and results increase level of conjugated or unconjugated bilirubin. When bilirubin level is more than 2mg/dl in blood plasma due to any reason is called as hyperbilirubinemia. When hyperbilirubinemia leads to yellowness of skin, sclera, nails, interstitial fluid then it is called as jaundice. Jaundice is mainly classified into two- unconjugated and conjugated type<sup>[14]</sup> but depending upon reasons due to which jaundice occurs it is also classified into 3 types- Hemolytic, Hepatocellular, Obstructive jaundice.<sup>[15]</sup>

### *Koshtaashrita Kamala (Hemolytic)*

The term *Koshta* means “*Sharira Madhya*” or *Maha Srotas*.<sup>[16]</sup> When *Pandu Rogi* uses *Pitta* aggravating *Ahara* and *Vihar*, then there is production of *Dushta Aahar Ras* which cause *Pacahaka Pitta Dusthi*. *Pacahak Pitta* (present in *Yakrit*; liver) *Dusthi* alleviates *Rakta Dhatu Dusti* (because *Pitta* and *Rakta* have almost same *Guna*) in *Koshta* results in *Koshtaashrita Kamala*. Accumulated *Pitta* stay in the gastrointestinal tract, due to the function of *Vata Doshas*. As result the vitiated *Pitta* which is present in *Koshta* (GIT) produces the excessive yellow colour of stool.<sup>[17]</sup> It has a similarity with the mechanism of pre-hepatic jaundice or haemolytic jaundice. Haemolytic jaundice occurs due to excessive production of bilirubin in spleen, displacement of bilirubin to bind with albumin (by sulfonamide drug) in blood vessels, decreased hepatic uptake of unconjugated bilirubin, problem in metabolism in hepatocytes- in hereditary

disorders, acquired defect i.e., neonatal jaundice. [14] Thus in term spleen, blood vessels and liver can assured as the important organs in the pathogenesis of *Kamala*, which may lead to the base behind taking spleen, liver & blood vessels as a *Mula* of *Raktavaha Srotas*.

### **Shakhashrita Kamala (Obstructive jaundice)**

*Hetu Sevan* leads to *Vata* and *Kapha Prakopa*. Vitiated *Vata* Dosha gets *Kaphasmmurchita* and cause obstruction in normal *Pitta nalika*, which results in *Pitta Vridhi* in *Rakta Dhatu*. Due to obstruction of passing of *Pitta*, *Pitta* does not reach to the *Pakwashaya* and *Vimargamana* of *Pitta* all over occur which results *Haridra Twacha*, *Netra* and *Mootra*. *Pitta* which is responsible for the normal color of stool, due to obstruction can't reach to the *Kostha* which results in "*Tila Pishta Sannibham Varchas*" (Clay colour stool). This *Kamala* is also known as *Alpa Pitta Kamala* [18] or obstructive jaundice. This type of jaundice occurs when there is either intrahepatic or extrahepatic obstruction. Intrahepatic cholestasis (impaired hepatic excretion)- It is due to hereditary disorders (Dubin-Johnson syndrome, Rotor's syndrome, fibrocystic disease of pancreas, intrahepatic atresia), acquired disorders or hepatocellular cholestasis (viral hepatitis, drugs, alcohol induced injury, cirrhosis). Extrahepatic cholestasis (extrahepatic biliary obstruction)- It is due to gall bladder stones, inflammatory strictures, carcinoma of head of pancreas, tumors of bile duct, congenital atresia of extrahepatic ducts). This leads to conjugated hyperbilirubinemia. Due to obstruction conjugated bilirubin does not come into the intestine and not converted into stercobilinogen and due to the absence of stercobilinogen color of faeces is pale. Due to obstruction this conjugated bilirubin goes into the blood through the hepatic vein and causes yellowness of skin, sclera, nails etc. [14]

## **DISCUSSION**

There are mainly four types of *Srotodusti*, they are *Atipravariti* (Excessive action), *Sanga* (Complete or partial obstruction of Srotas), *Vimargaman* (leaving its own channel and enters in other channel), *Siragranthi* (new growth inside the Srotas). Bilirubin is the yellow breakdown product of normal heme catabolism in spleen caused by macrophages for clearance of aged RBC which contain haemoglobin. Hemoglobin is broken down to heme and globin protein. The globin protein is break down into amino acids. The heme, on the other hand, undergoes oxidation reaction catalysed by the enzyme oxygenase to give biliverdin, iron, and carbon monoxide. Biliverdin yields a yellow pigment called bilirubin. This bilirubin is unconjugated. From spleen it goes to liver. In liver unconjugated bilirubin is conjugated with the help of glucuronic acid. Conjugated bilirubin is water soluble that can be excreted. Bacteria in the intestine convert the bilirubin into urobilinogen. This urobilinogen is then converted into stercobilinogen or excreted in the feces or it is reabsorbed by the intestinal cells and taken to the kidney via blood to be excreted in the urine. In this way normally the spleen, blood vessels and liver produce, metabolize, and excretes the bilirubin in the form of bile. However, if there is *Atipravariti* (excessive production in spleen) of bilirubin, *Siragranthi* (bile stone), *Sang* (obstruction in liver or outside the liver) and *Vimargamana* (through blood vessels), then it results in jaundice.

## **CONCLUSION**

Spleen, blood vessels and liver can assure as the important organs in pathogenesis of *Kamala*, which may lead to the base behind taking spleen, liver & blood vessels as a *Mula* of *Raktavaha Srotas*. The concepts proposed by our eminent *Acharyas* for *Srotomula* can be established by the pathological conditions given by them in *Srotodushti Lakshanas*. This needs extensive studies of the conceptual matter

regarding the srotas from various texts and their establishment through knowledge provided by modern medicine.

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