WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 3, 1813-1820. Review Article ISSN 2277–7105

# KALA- A STRUCTURAL CO-RELATION WITH DRAVYA (PLANT CROSS SECTION)

**Dr. Bhagyashri R. Pathak[1]*, Dr. Varsha V. Khanapurkar[2]**

[1]Assistant Professor, Dept. of Sharira Rachana Late. B.V Kale M.A.M.C and Hospital, Latur.

[2]HOD, Professor, Dept. of Dravyaguan Late. B.V. Kale M.A.M.C. and Hospital, Latur.

Article Received on 05 Jan. 2026,
Article Revised on 25 Jan. 2026,
Article Published on 05 Feb. 2026

https://doi.org/10.5281/zenodo.18480198

***Corresponding Author**

**Dr. Bhagyashri R. Pathak**

Assistant Professor, Dept. of Sharira Rachana Late. B.V Kale M.A.M.C and Hospital, Latur.

**How to cite this Article:** Dr. Bhagyashri R. Pathak[1]*, Dr. Varsha V. Khanapurkar[2]. (2026). Kala- A Structural Co-Relation with Dravya (Plant Cross Section). World Journal of Pharmaceutical Research, 15(3), 1813–1820.


## ABSTRACT

Kala – Sharir" it's also a specific term labelled by Aacharya Sushrut in Sharir sthana. The word Kala stands for Property or quality so these are some special membranes in the body which are having important role in performing body Physiology. They Provide Support and protections to the organs. The cell membranes separating each and every cell can be considered as 'Kala'.' In the classical text while explaining Kala Sharir our Acharya use to give an example of plant cross section. So in thrust of knowledge through this review article authors want to explain Kala Sharir according to Ayurved and Co-relation between plant cross section with Kala.

## KEYWORDS:

Kala Sharir*

Sharir Sthana*

Plant Cross Section*

Co-relation*

## INTRODUCTION

Ayurveda is one of the most ancient medical Sciences of the world. It is considered the Upaveda of Atharva Veda.

Rachanna Sharir is a branch of an Ayurved which encloses an anatomy of human body. Our ancient Compandia has many specific terminologies related to Rachana Sharir.

"Kala - Sharir" it's also a specific term labed by Aacharya Sushrut in Sharir sthana.

The word Kala stands for Property or quality so these are some special membranes in the body which are having important role in performing body Physiology. They Provide Support and protections to the organs. The cell membranes separating each and every cell can be considered as 'Kala'.'

In the classical text while explaining Kala Sharir our Acharya use to give an example of plant cross section.

So in thrust of knowledge through this review article authors want to explain Kala Sharir according to Ayurved and Co-relation between plant cross section with Kala.

## DISCUSSION

### 1) Definition of Kala

"Kalaaha Khalu api Sapta bhavauti dhatu
Aashaya antara maryaadaha" (Ref. Su.Sha 4/5)[2]

By definition it is clear that the Kalas are the layers or membranes present at the junction of the dhatu and their aashayas.

They form a screen or partition between the tissue and the organ which is made by that tissue.

**2) Types of Kala Sharir:** There are Seven Kalas in our body.

"Kalah Khalvapi Sapta Sambhavantil" (Su.Sa.)

1) Mansadhara Kala-
2) Rakta Dhara Kala-
3) Medo Dhara Kala -
4) Sleshma Dhara Kala -
5) Purisha Dhara Kala -
6) Pitta Dhara Kala-
7) Sukra Dhara Kala-

### 1) Mansadhara Kala

"Taasam Pradhanaa Maamsa dhara yasyaam Maamse Sira snayu dhamanee Srotasam Prataanaah bhavanti" (Su.Sa.418)

The first of the seven Kalas is the 'Mansa dhara Kala'. The Kala Possesses the branches and expansions of siras, Snayus, dhamanis and Srotases.

**2) Rakta Dhara Kala**

"Dwiteeyaa Raktadhara Maamsasya Aabhyantaratah. Tasyaam Sonitam Viseshatascha Siraasu Yakrit plechnos Cha bhavati". Su.Sa 419.

- Second Kala is the Rakta dhara present in the Substance of Mamsa. This Kala is Particularly Present in yakrit and Plecha.

**3) Medo Dhara Kala**

"Meda hi Sarva Bhutaanaam udarastham An vasthishu Cha Mahatsu. Cha majja bhavati".

- Third Kala is Medodhara. It is mainly seen in Udara (Abdomen) and Anu asthis (Small bone).

**4) Sleshma Dhara Kala**

"Chaturdhee sleshma Dharaa yaa Sarva Sandhishu Praana Bhritaam Bhavati".

- Fourth kala is Called 'Sleshma dhara kala'. The Kala is present in all the sahdhis and in all the living beiugs.

**5) Purisha Dhara Kala**

"Panchamee Pureesha dhara nama yaantah Koshte malam Abhi Vibhajate Pakwaasayasthaa".

The fifth Kala is Called 'Pureesh Dhara kala. Being located in Pakwaasaya of Antah Koshta. Separates the faeces from the absorbable part of the food.

**6) Pitta Dhara Kala**

"Shastee pitta dhara naama yaa Chatturvidha mannpaanam upayuktan Aaamaa Sayaat Prachyutam Pakwaasayo pari stistam dhaarayati" Su.Sa.

- The sixth Kala is 'Pitta dhara Kala'. This Kala hods the food that has passed down from Amasaya and above the pakwasaya till it is completely digested by the Paachka Pitta located in this Kala. The Kala holds all four types of food i.e. Bhakshya, Bhojya, Lehya, Chushya and other drinks and water.

**7) Sukra Dhara Kala**

"Saptamee Sukra dhara naama yaa Sarva Praaninaam Sarva Sharira Vyaapinee".

body.

The Seventh Kala is 'Sukra dhara'. This Kala extends throughout the

**3) The Seven Kala can be correlated with the following manner**

**i) Mansadhara Kala**

Connective tissue layer inside muscle Such as, intramuscular septa, aponeurosis, ligaments etc. This is Snayuprati channa Kala.

**ii) Raktadhara Kala**

Thin mucous membrane inside arteries, veins, spleen formed by epithelial tissue. This is Shleshmadhara Kala.

**iii) Medodhara Kala**

Membranes Composed of adipose tissue (fat) such as, Subcutaneous facia, omentum etc.

**iv) Shleshmadhara Kala**

Synovial membranes Present in joint of bones, it is serous membrane formed from epithelial tissue.

**v) Purishdhara Kala**

Mucous membranes present. Inside the large intestine formed from epithelial tissue.

**vi) Pittadhara Kala**

Mucous Membranes present inside the stomach, duodenum and small intestine.

**vii) Sukradhara Kala**

It is the mucous membrane the testes, Semeifrons tubules, Epidedymus, vas deferens and prostate in male and Vagina, Uterus, uterine tubes, and ovaries in female.

**4) Kala Swarupa (Structure and appearance of Kala)**

*"yathaa hi Saaraha Kaashteshu*
*Chidhya maaneshu drushyate*
*Tathaa hi dhaatuhu maanseshu*
*Chidhya maaneshu drushyate*
*Snaayubhihi ch Pratich channaan*
*Santataam Cha jaraayunaa*

*Shehmaa Veshtitaam Cha api Kalaa*
*Bhaagaaha tu taan Viduhu" (Su.Sh. 4/6, 7)*

By definition it is clear Kalas are layers or membranes Present at junction of dhatu and aashays.

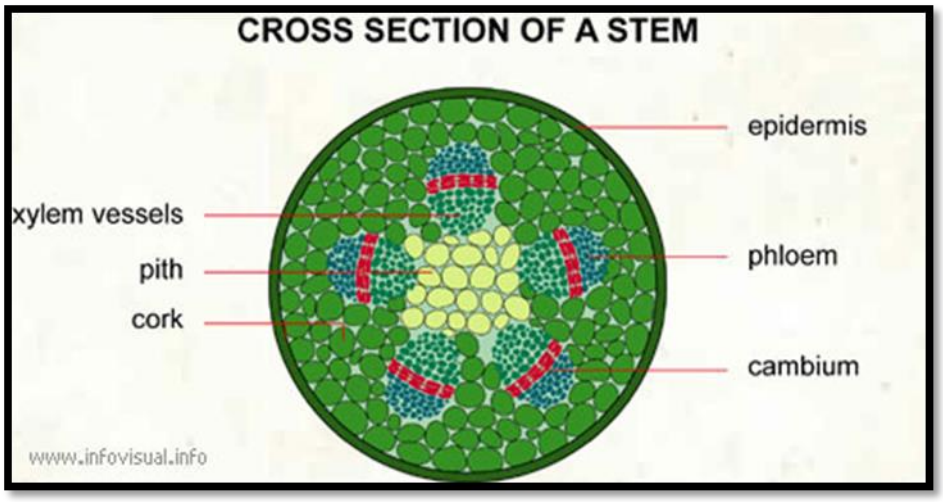
When we cut a wood. Some Liquid flows out of it This can be considered. as the essence of the tree or wood.

Similarly, When we cut a muscle, we can see the tissues flowing through it or oozing through it in the form of Rasa (Plasma) & Rakta (blood).

The Portions of the body which are covered by Snayus (Ligaments and tendons) enveloped by Jarayu (Membrane) and Smeared with Kapha (Mucous) are Called Kalas.

This appearance of Kala explained above fits into the category of mucous membranes and epithelium. Thus the membranes which secrete mucous and Protected by the Snayus are Called Kalas.

**5) Plant Cross Section**




The stem of a plant is one of the structural parts of a vascular plant. It is a part above ground which provides Support for leaves and buds. And also have several jobs like help plant to reach for light, transport water and minerals, store nutrients, produce new plant tissue too.

If look carefully at the cross section of a stem, as above mentioned by Acharya Sushrut. We would find several layers inside, each of which has different job. From outside to inside the layers are bank or epidermis, Phloem, Cambium, Xylem, and pith.

**1) Epidermis**

- Outer layer
- Add Stability and protect Plant
- Cells are war coated

**2) Phloem**

- One of the transport tube.
- It's job to distribute food which is essential for plant.

**3) Cambium**

- An area of high cell growth.
- It has phloem on outer side & xylem on inner side.
- Cambium Provides Cells for both layers on eighter side inversing the width of the stem.

**4) Xylem**

- It is also a transport tube.
- But instead of transporting food. It transports water and minerals from roots.
- It also provides support system and more wordy part of plant.

**5) Pith**

- It is Composed of soft, spongy Parenchyma cells.
- It store nutrients throughout plants.

**6) Modern View of Kala**

Membrane are formed during the embryonic period itself, mainly from three kinds of primary tissues-epithelial, Connective, and adipose.

**1) Epithelial Tissue**

- It makes two kinds of secreting membranes vis. Mucus & serous.
- They secretes thick jell like fluid.
- This is may be relating to Epidermis as the cells of epidermis are covered with wax like jelly fluid.

**2) Connective Tissue**

- It Provides transport system within our body for oxygen and other important substances.
- This may resemble with phloem and xylem. Of plant as they are also transport tube.

**3) Adipose Tissue**

- It is a storage tissue.
- It forms membranes or layers.
- It may be resemble in function with pith. As it is also a storage tissue of plant.

Hence, This type of Co-relation may help to reveal the intent of our Aachary's example.[1,4]

## 7) CONCLUSION

The concept of Kala in Sharir Rachana represents subtle structural and functional boundaries that support, protect, and regulate the underlying Dravya. Ayurveda classifies Dravya broadly into two types—Jangam (animal origin) and Audbhid (plant origin). While Kala Sharir is traditionally explained with reference to the human body (Jangam Dravya), its fundamental principles can also be extended to Audbhid Dravya, particularly in understanding plant anatomy.

The transverse section of a plant reveals well-defined structural layers such as epidermis, cortex, endodermis, vascular bundles, and pith. These layers function as protective, nutritive, and conductive boundaries, closely resembling the functional role of Kala described in Ayurveda. Just as Kala separates Dhatu, Ashaya, and Srotas in the human body, the plant cross section demonstrates organized layers that separate and support different tissues and physiological processes.

Thus, the structural correlation between Kala Sharir and the transverse section of a plant highlights a common underlying principle of organization in both Jangam and Audbhid Dravya. This comparative understanding strengthens the holistic Ayurvedic view that similar structural and functional laws govern all living systems, regardless of their origin, thereby reinforcing the universality of Ayurvedic anatomical concepts.

## 8) REFERENCES


1. Yashasvi Khobragade, Dr. Sachin Khedikar, study of Raktadara kala with special reference to Atherosclerosis. Research Journal of Holistic Health Management, Sep. 2017; 7.
2. Chandrat, Nagrjuna, Sushruta Samhita, Sharir Sthana, Garbhavyakanan Adhyaya, 5/7, translated by Prof. K.R. Srikantha Murthy, Vol-1, Chaukhamba Orientalia, Varanasi, 2008; 54.
3. Parmar Vidhi, Jui Shahane, Basic Concept of Kala - A review. Int. J. Ayu. Pharm, Chemical, 2018; 8.
4. Dr. Dhimdhine Ravindra, Dr. Tawalare Kiran, Dr. Tawalare Kalpana, Kala-Sharir Testimony insight from Ayurveda, World Journal of Pharmaceutical and life Science, 2(5): 348-353.
5. https://goo.gl/images/fliz49
6. Ghanekar Bhaskar Govind, Ayurved Rahasya Dipika Hindi Tika, Suushrut Samhita,1 St ed. New Delhi, Maharchand Lakshaman Das Publications, 2006.
7. Ambika Dutt Shashtri, Ayurved Ttva Sandipika Hindi Tika, Sushrut Samhita, 1st ed. VaranasiChaukhamba Sanskrit Sansthan, 2014; 1.
8. Lalchand Vaidya, Sarvanga Sundari Hindi Tika, Ashtanga Hridayam, 1st ed, New Delhi, Motilal Banarasi Das, 2005.
9. Sharangdhar Samhita, Purva khand 5/6, K.R. Murtty Chaukhamba Orientalia, Varanasi, 2010.
10. Sushruta Samhita- Dalhan Teeka-6th edition, 1997.
11. Pratyaksha Sharir- Gananath Sen-Chaukhamba Sanskrit Sansthan; Varanasi, 1971.
12. Dr. Laxmidhar Dwivedi, Kaviraj Kunjalal Bhishgratna, Sushrut Samhita, Sharir Sthan II, Chowkhamba Sanskrit Seriesoffice, Varanasi, Reprinted- 2007 Edition 3rd.
13. Dalhana on SusrutaSamhita, Sharirasthana, Garbhavyakaraṇ aadhyaya, 4/05.
14. Kaviraj Kunjalal Bhishgratna Sushrut Samhita, Kalpasthan, Chowkhamba Sanskrit Series Office, Varanasi Edition 4th 2009 Editor – Dr. Laxmidhar Dwivedi, III.
15. Dr. Kevalkrishna Thakaral, Sushrut Samhita, Sharir Sthan Vol. II, Chowkhamba Orientaliya, Varanasi Reprinted, 2017.