

# *Introduction to Plant Science in Vrikshayurveda*

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# Introduction

- *Vrikshayurveda* of Parasara is a great contribution to the Botany from ancient India.
- पराशर का वृक्षायुर्वेद प्राचीन भारत के वनस्पति विज्ञान को एक महान योगदान है।
- The original text can be placed in between 1st century B.C to 4th century A.D by its linguistic style and reference of this book in *Arthasastra*, *Agnipurana*, *Brihatsamhita* etc., of ancient texts.
- इसकी भाषाई शैली और अर्थशास्त्र, अग्निपुराण, बृहत्संहिता आदि प्राचीन ग्रंथों में इस पुस्तक के संदर्भ के आधार पर मूल पाठ को पहली शताब्दी ईसा पूर्व से चौथी शताब्दी ईस्वी के बीच रखा जा सकता है।

- Many scientific branches of Botany including origin of life, ecology, distribution of forests, morphology, classification, nomenclature, histology and physiology were dealt in this ancient work.
- इस प्राचीन कार्य में जीवन की उत्पत्ति, पारिस्थितिकी, वनों का वितरण, आकृति विज्ञान, वर्गीकरण, नामकरण, ऊतक विज्ञान और शरीर विज्ञान सहित वनस्पति विज्ञान की कई वैज्ञानिक शाखाओं का वर्णन किया गया था।
- Earlier *Vrikshayurveda* was revealed by Brahma and embodied in the *Atharvaveda*.
- इससे पहले वृक्षायुर्वेद ब्रह्मा द्वारा प्रकट किया गया था और अथर्ववेद में सन्निहित था।
- Later Parasara at Chaitravana of Himalayas has revealed the total text as the answers to the questions of sages. And also presumed that this book was written by Parasara to teach Botany to ancient *Ayurvedic* students.
- बाद में पराशर ने हिमालय के चैत्रवन में ऋषियों के प्रश्नों के उत्तर के रूप में संपूर्ण पाठ प्रकट किया। और यह भी माना कि यह पुस्तक पराशर द्वारा प्राचीन आयुर्वेदिक छात्रों को वनस्पति विज्ञान पढ़ाने के लिए लिखी गई थी

- Literally Vrikshayurveda means "the science of plant life". There exists another text on the Vrikshayurveda: attributed to Surapaja (12th century A.D). As such, present text of Parasara is presumed to be the older.
- वृक्षायुर्वेद का शाब्दिक अर्थ है "पौधों के जीवन का विज्ञान"। वृक्षायुर्वेद पर एक और पाठ मौजूद है: इसका श्रेय सुरपजा (12वीं शताब्दी ईस्वी) को दिया जाता है। इस प्रकार, पराशर का वर्तमान पाठ सबसे पुराना माना जाता है।

# About the Book

- Literally *Vrikshayurveda* means “the science of plant life”.
- वृक्षायुर्वेद का शाब्दिक अर्थ है "पौधों के जीवन का विज्ञान"।
- Shree Jogendranath Sarcar and Roma sarcar discovered and translated the original manuscript.
- श्री जोगेंद्रनाथ सरकार और रोमा सरकार ने मूल पांडुलिपि की खोज की और उसका अनुवाद किया।
- It is written in *Sutra* (aphoristic) style.
- यह सूत्र (सूक्ति) शैली में लिखा गया है

This book is divided into six parts (*Kaandas*) viz.,

1. *Bijotpathi Kaanda*- बिजोत्पत्ति काण्ड
2. *Vanaspati kaanda*- वनस्पति कांड
3. *Vaanaspadya kaanda*- वानस्पत्य कांड
4. *Gulma kshupa kaanda*- गुल्मक्षुप काण्ड
5. *Virudha valli kaanda*- विरुद्ध वल्ली कांड
6. *Chikitsa kaanda*- चिकित्सा काण्ड

The *Cikitsakaanda* is now missing.

- यह पुस्तक छह भागों (काण्डों) में विभाजित है, अर्थात् बिजोत्पत्ति काण्ड, वनस्पति काण्ड, वनस्पति काण्ड, गुल्म क्षुप काण्ड, विरुद्ध वल्ली काण्ड और चिकित्सा काण्ड। चिकित्साकाण्ड अब लुप्त हो गया है।

# Ch.1.BIJOTPATTI KAANDA

## बिजोत्पत्ति काण्ड

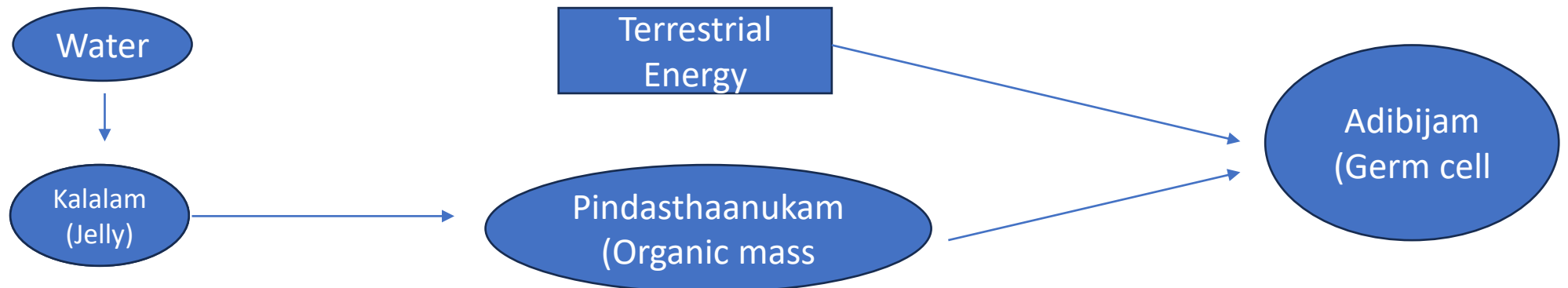
This Kaanda contains 8 chapters:

- Ch 1: *Bijotpatti-sutriyaadhyaya*- बिजोत्पत्ति-सुत्रियाध्याय
- Ch 2: *Bhumivarga-sutriyaadhyaya*- भूमिवर्ग-सुत्रियाध्याय
- Ch 3: *Vanavarga-sutriyaadhyaya*- वनवर्ग सुत्रियाध्याय
- Ch 4: *Vrikshanga-sutriyadhyaaya*- वृक्षांग सुत्रियाध्याय
- Ch 5: *Pushpanga-sutriyadhyaaya*- पुष्पांग सुत्रियाध्याय
- Ch 6: *Phalaanga-sutriyadhyaaya*- फलांग सुत्रियाध्याय
- Ch 7: *Ashtaanga-sutriyadhyaaya*- अष्टांग सुत्रियाध्याय
- Ch 8: *Dwiganiya-Adhyaya*- द्विगणीय अध्याय

# Ch 1/1: Bijotpatti-sutriyaadhyaya

## बिजोत्पत्ति-सुत्रियाध्याय

- In this Aadhyaya the origin of life has been emphasized beautifully.
- Water transformed to jelly like substance (*Kalalam*), which eventually formed an organic mass (Pindasthaanukam) and this organic mass in course of time being regulated by terrestrial energy turns to germ cell (*Adibijam*) [\(verse 6\)](#).
- पानी जेली जैसे पदार्थ (कलालम) में बदल गया, जिसने अंततः एक कार्बनिक द्रव्यमान (पिंडस्थानुकम) का निर्माण किया और समय के साथ यह कार्बनिक द्रव्यमान स्थलीय ऊर्जा द्वारा नियंत्रित होकर रोगाणु कोशिका (आदिबिजम) में बदल गया (श्लोक 6)।





- Other scientific descriptions, narrated in this chapter were germination of seed, consciousness and sense of feeling of plants(Sukha-dukhah-samanvitaha)

### Broad classification of plants like

1. *Vanaspati* (with hidden flowers- *Apushpavanta* or *Pushpamavyaktam*) (अपुष्पवंता या पुष्पमव्यक्तम्).
2. *Vaanaspatiya* (with visible flowers), *Virudha-Valli* (Creepers and climbers) and *Gulma* (shrubs or plants with small branches) etc.

Propagation of plants by seeds, branch cuttings, rhizomes, bulbs and leaves.

## Ch 1/2: *Bhumivarga-sutriyaadhyaya* भूमिवर्ग-सुत्रियाध्याय

- Deals with basic types of lands. Total earth is of 3 types *Jaangala*, *Anupadesha* and *Misradesa*.

### *Jangala desa*

- Desert like land with scanty vegetation and limited water sources.
- *Badara* (*Zizyphus mauritiana*), *Khadira* (*Acacia catechu*) etc plants will grow in these lands.

### *Anupa desa*

- area with rivers, streams, lakes and seashores. green, grassy with clay soil. Large trees, dense forests appear in this land.

### *Misra desa*

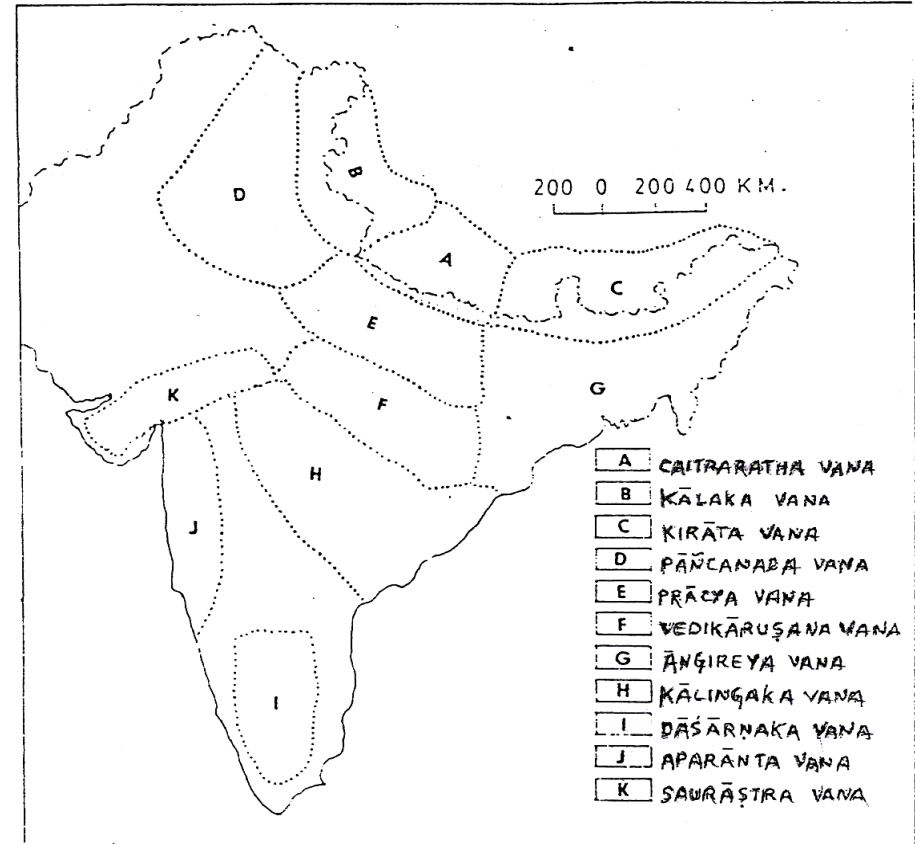
- mixed features of *Jaangala* and *Anupadesha*.
- *Ushavaan* (soil with alkaline patches), *Sarkarila* (soil with rock particles), *Sikatila* (land dominated by sand), *Swadwala* (land covered with grass) etc. were other types were described.

# Ch 1/3: *Vanavarga sutriyaadhyaya* वनवर्ग सुत्रियाध्याय

- This chapter describes the forests located in different regions of ancient India. These are

1. Kaalaka
2. Kiraata
3. Panchanada
4. Praacya
5. Chaitrarathavana
6. Vedikaa-rushaka
7. Angireya
8. Kaalingeya
9. Daasarnaka
10. Aparanta
11. Saurashtra vana.

Distribution Of Forest Regions In Ancient India As Mentioned In  
The *Vr̥kṣāyurveda* Of Parāśara  
( Approximate Areas)



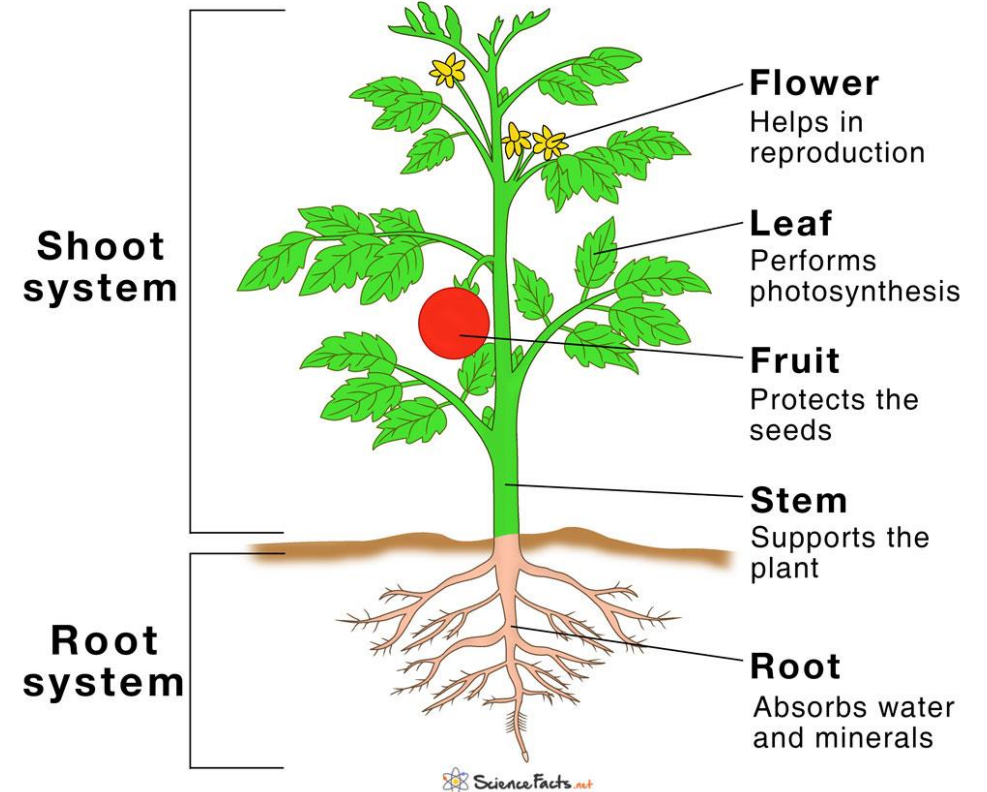
# Ch 1/4: *Vrikshanga sutriyaadhyaya* वृक्षांग सुत्रियाध्याय

Deals with different parts of plant Viz *Patra* (leaf),

- *Pushpa* (flower)
- *Phala* (fruit),
- *Mula* (root),
- *Twak* (Bark),
- *Kaanda* (stem),
- *Saara* (Heart wood),
- *Swarasa* (sap),
- *Niryaasa* (Exudation),
- *Sneha* (Oleaginous matter),
- *Kantaka* (Spine or prickle),
- *Bija* (seed), *Praroha* (Seedling) etc.

Influence of *Pancha Mahabhutas*, (earth, water, fire, air and space) on plant life was explained.

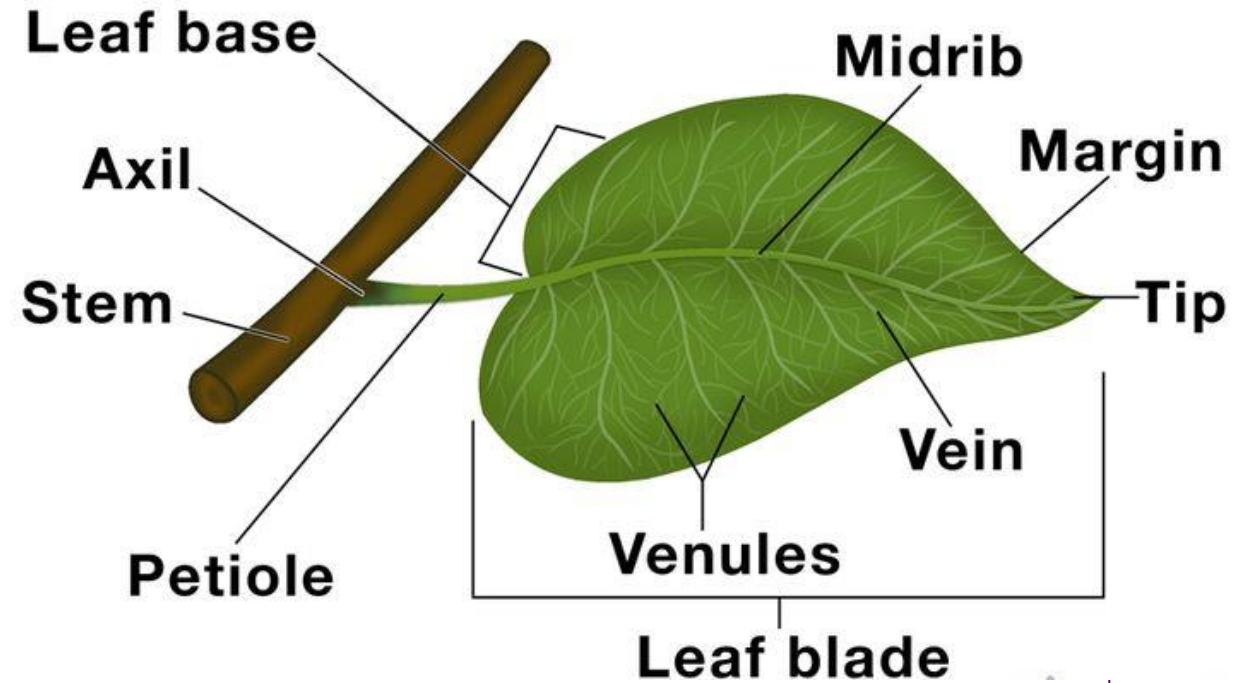
## Parts of a Plant



## A. morphological terms related to leaf parts

- *Patrapaksham* (leaf blade)
- *Vrintam* (petiole)
- *Sungam* (bud scale)
- *Patrasira* (veins)
- *Rasakosa* (may be cells)
- *Maarhi* (rachis)
- *Vistaara* (tendrils)
- *Pathika* (leaf sheath)
- *Upakasham* (stipule)
- *Vrinta-bandhanam*- attachments of petioles


## Parts of a Leaf



## Ch 1/4: *Vrksanga- sutriyadhyaaya* वृक्षांग सुत्रियाध्याय

Based on structure of leaves different types of leaves were mentioned.

- ***Arghyapatram***: Arghya is a receptacle used for offering flowers (verse 37) eg: *Stephania japonica*.
- ***Juhu partram***: *Juhu* is a kind of ladle used to offer ghee in sacred fire.
- ***Sruva patram***: *Sruva* is a Vedic sacrificial instrument.
- ***Vritta-varha***: circular leaf e.g. *Nelumbo nucifera*.

- *Mandalaagra*: leaf with round apex eg. *Artocarpus heterophyllus*
- *Dirgadala*: leaf with long lamina eg. *Musa paradisiaca*.
- *Vira-patra*: sword shaped leaf e.g. *Lillium* sp.
- *Yugma-patra*: leaf is deeply notched and appears as two e.g. *Bauhinia* sp. 
- *Manduka-parna*: frog shaped leaf e.g. *Centella asiatica*

Similarly *Sanku-vaha*, *Guccha-patra*, *Simbi-parna*, *Kaca-patra*, *Aswa-karna*, *Hasti-karna*, *Hamsa-padi*, *Paravata-padi*, *Nadi-parna*, etc., were described.

# Ch 1/4: *Vrikshanga sutriyadhyaya* वृक्षांग सुत्रियाध्याय

Other Important descriptions are

- *Siraa-sannivesa* – types of venation (Ex. *Jaalavat*- reticulate venation)
- *Marhi* (Rachis) and its types (Ex. *Ekasandhikam*- leaflets articulated together at a point -Palmate compound)

## “LEAF Venation”



Parallel Venation  
(Parallel Veins)



Reticulate Venation  
(Net-like Veins)



©UJK Marlow



Special attention was given to *Rasakosha* (Cells?). It is described that every leaf is made up of innumerable *Rasakoshas* (रसकोशस्तु अपरिसंखयेय) and these are considered as the reservoirs of fluid (*Rasa*).

Further it is elaborated that these *Rasakoshas* are invisible in size (*Anavascha*).

All these descriptions reveal the innovative presumptions of author about minute cells in a leaf.

## पादप कोशिका (रस कोष)

पाराशर

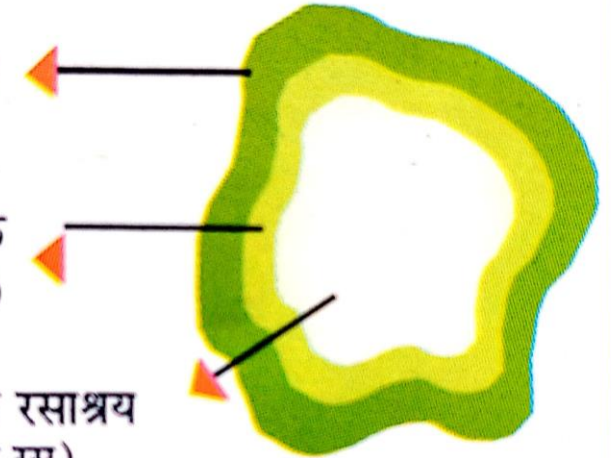
कलावेस्टन  
(बाह्यभित्ति)

सूक्ष्म पत्रक  
(अन्तःभित्ति)

रंजक युक्त रसाश्रय  
(वर्णक युक्त रस)

अनवस्व

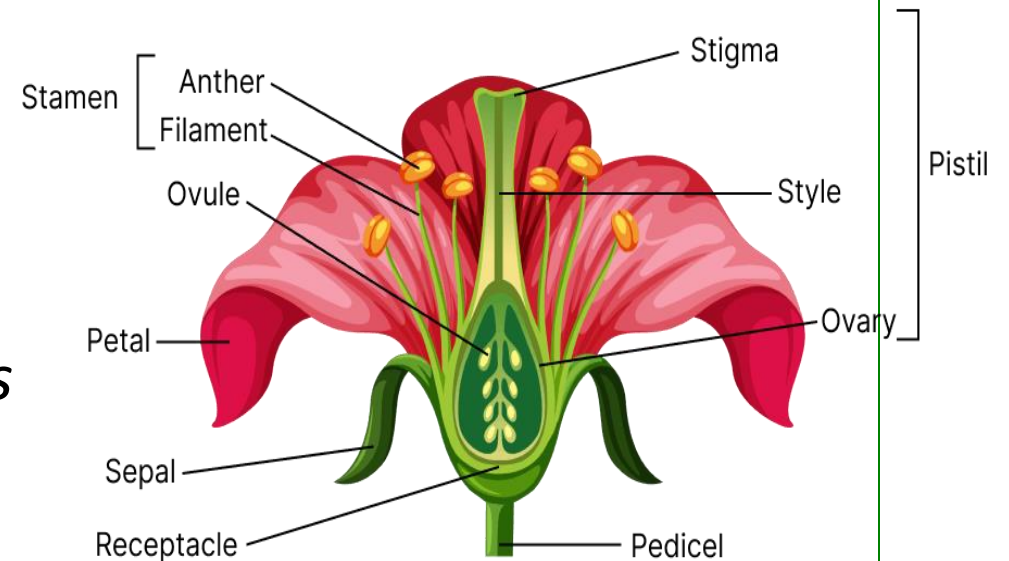
(नंगी आँखों द्वारा अदृश्य पदार्थ)



# Ch 1/5: *Pushpanga sutriyadhyaya* पुष्पांग सुत्रियाध्याय

This chapter deals with flowers and its different parts. Those are:

- *Vallari- inflorescence*      *Parimal- fragrance*
- *Vrinta-pedicel*                *Makaranda-Nectar*
- *Jalaka-calyx,*                 *Bijadhara-ovary*
- *Upajaala- epi calyx*         *Varaataka- style*
- *Dala-corolla*                 *Sthalaka- Thalamus*
- *Kesara –stamens*             *Mocikam –spathe*
- *Paraaga- pollen*             *Kinjalka- anther*
- *Puspamandala Sannivesa- floral phyllotaxis*



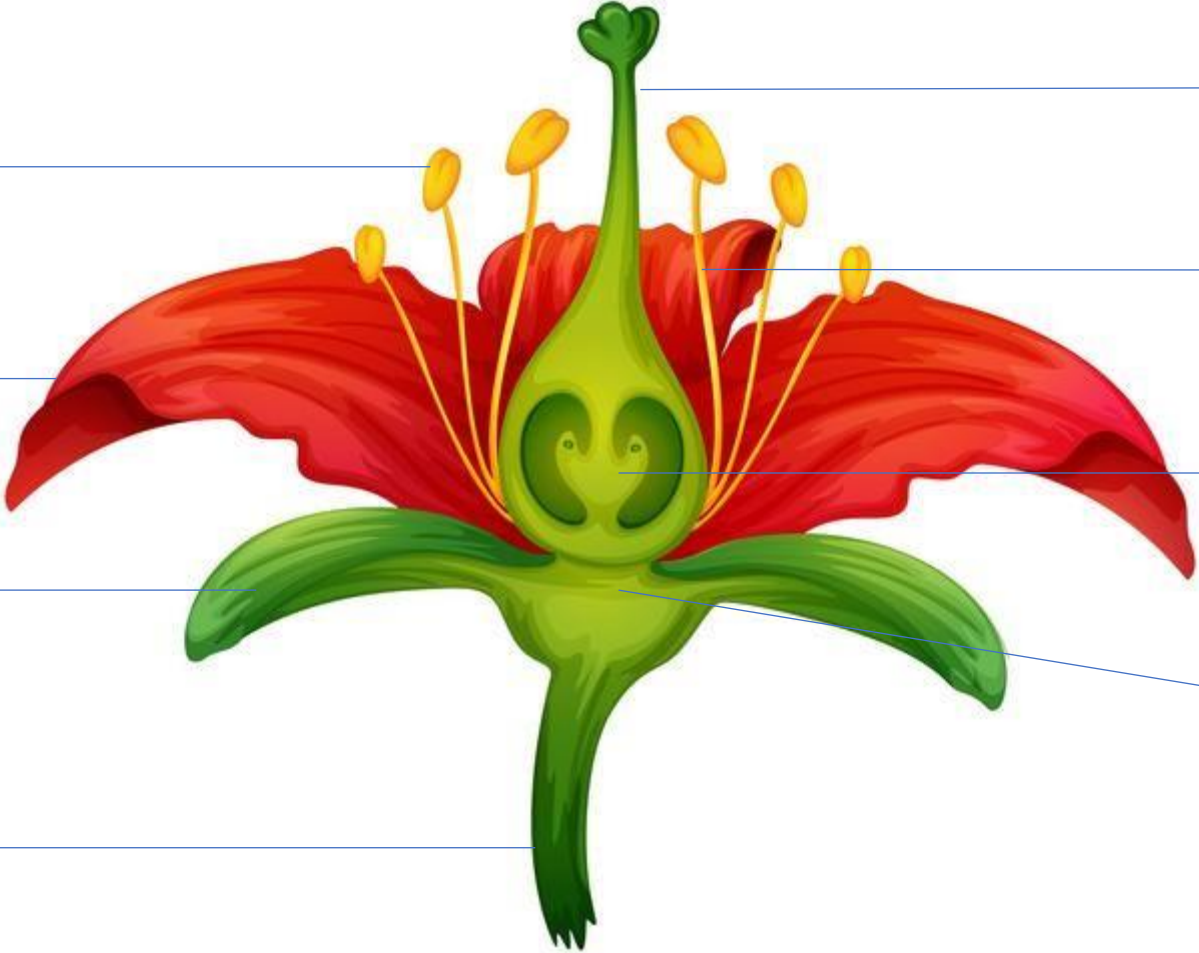
# Floral Parts in Vrikshayurveda

Kinjalaka

Dala

Jalaca

Vranta



Varaantaka

Kesara

Bijadhara

Sthalaka

*Vallari* (or) inflorescence has been classified into different types like

- *Palasha-vallari* (characterized by presence of bracts)
- *Pankti Manjri* (arrangement in rows- पंक्ति क्रमेणपुष्पबंदनं विध्यत्)
- *Arka-manjari* (Pedicels arranged on inflorescence axis similar to that of a wheel converging at the centre)
- *Chatra-manjari* (inflorescence like umbrella)
- *Guccha-vallari* (cluster inflorescence)
- *Sankula-vallari*(?),
- *Otu Puchika* (cat tail like inflorescence-ex *Uraria picta*) etc.

# Ch 1/5: *Pushpanga sutriyadhyaya* पुष्पांग सुत्रियाध्याय

Different types of stamens (*Kesara*), ovary (*Bijadhara*) and style (*Vaarataka*) were also described.

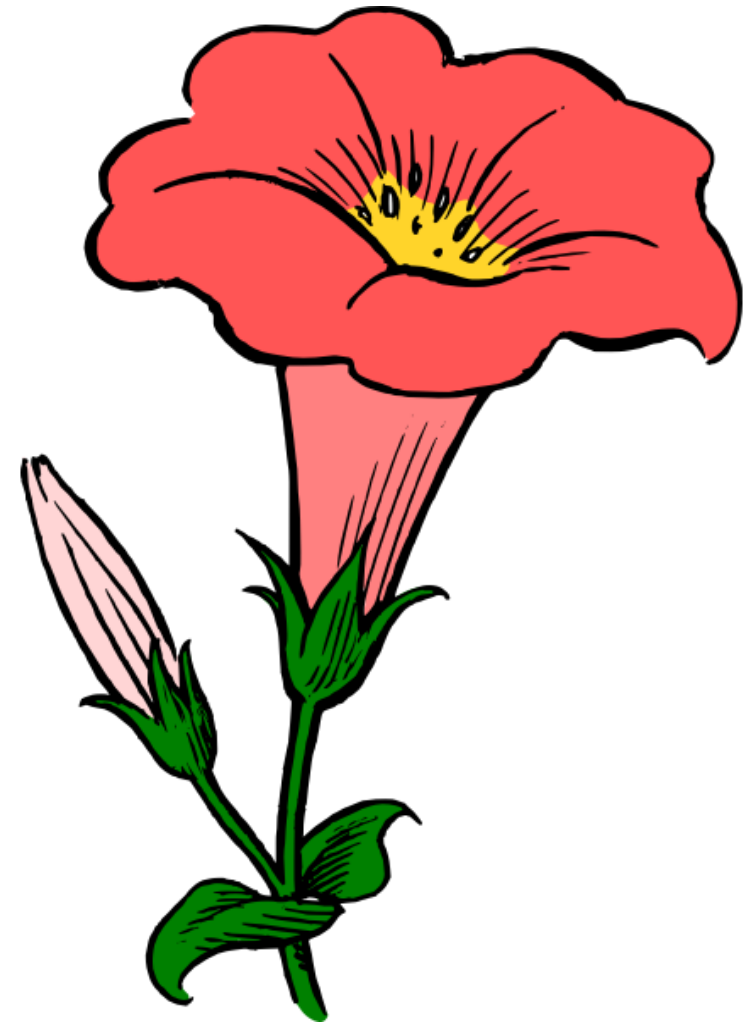
## Classification of flowers

According to their location

- *Kukshi pushpa* (flowers on leaf axil)- Axillary
- *Kanda puspa* (flowers on the stem)- Hypanthium
- *Vallari puspa* (flowers as inflorescence)- Capitulum

## According to nature

- *Saphala pushpa* (Fertile flowers), *Nishphala pushpa* (Sterile flowers) come under:
- *Vyaktapushpa* – open flower, *Avyakta pushpa*- closed flower.
- *Ravikanta pushpa* – Bloom during sunlight, *Chandra kantapushpa* - bloom during night times or moonlight.
- *Ritu pushpa* – Seasonal flowers, *Sadapushpa* – All time available flowers.
- *Muktadala pushpa* (Polypetalous), *Yuktadala pushpa* (Gamopetalous)



• *Muktadala pushpa* (Polypetalous), *Yuktadala pushpa* (Gamopetalous)

# Ch 1/5: *Puspanga sutriyadhyaya* पुष्पांग सुत्रियाध्याय

Based on flowers, the plants were divided into groups (*Ganas*). Each *ganas* characters were described in more than 10 lines Sanskrit slokas. Based on these characters when they are equated to modern plant families they are as under:

- *Cuta-ganiya-pushpa*- Anacardiaceae
- *Kuha-pushpa-ganiya*- Rhamnaceae
- *Sami-ganiya-pushpa* – Leguminaceae
- *Odra-pushpa-ganiya*- Malvaceae
- *Puplika-ganiya-pushpa*- Rutaceae
- *Mallika-pushpa-ganiya*-Apocynaceae



- *Swastika-ganiya-pushpa* – Brassicaceae (Cruciferae)
- *Trpusa-ganiya-pushpa* – Cucurbitaceae
- *Avaak-pushpa-ganiya-* Apiaceae (Umbelliferae)
- *Aksha-pushpa-ganiya-* Combretaceae
- *Vajra-pushpa-ganiya-* Pedaliaceae
- *Bhrnga-pushpa-ganiya-* Verbenaceae
- *Kotara-pushpa-ganiya-* Convolvulaceae
- *Bhadra-pushpa-ganiya-* Meliaceae

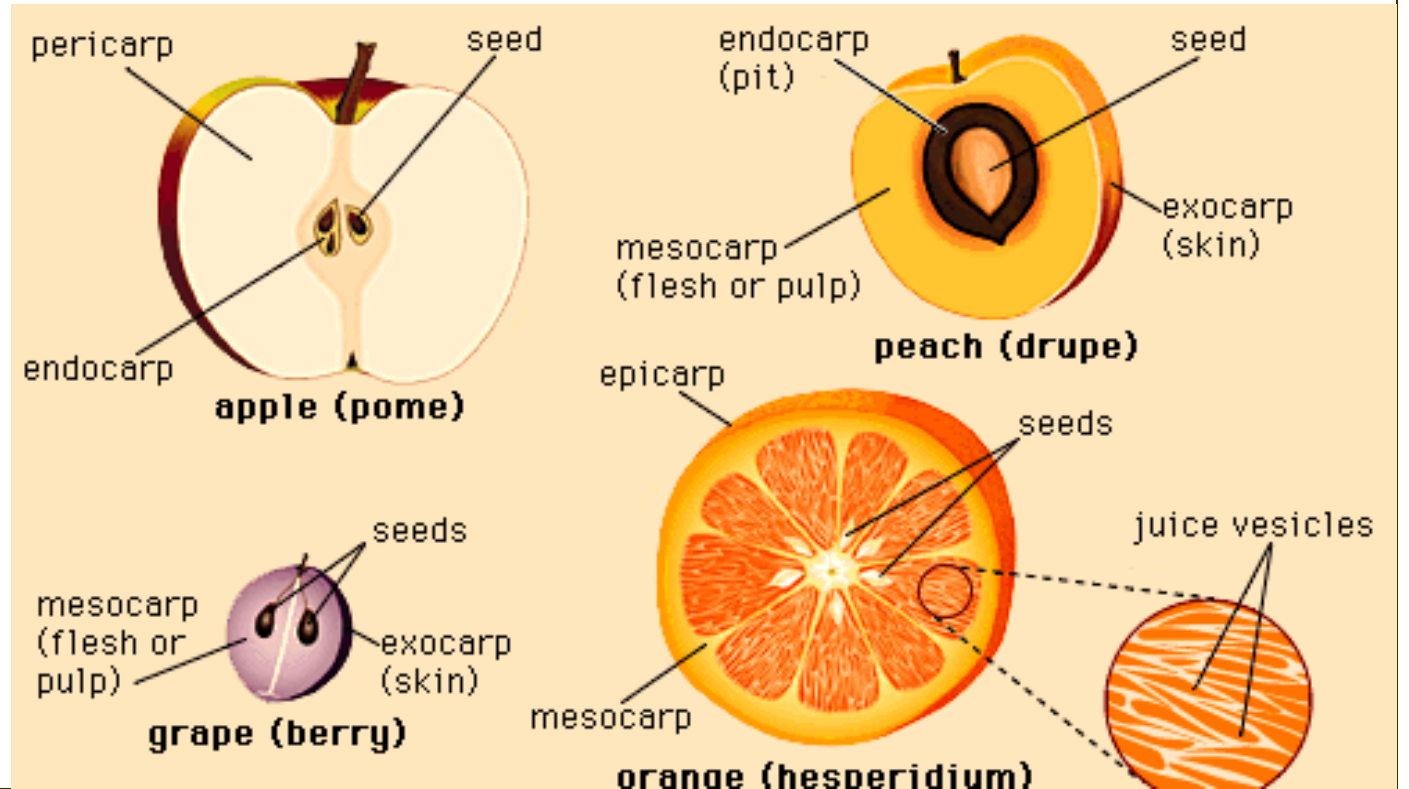
# Ch 1/6: *Phalaanga sutriyaadhyaya*

## फलांग सुत्रियाध्याय

This chapter deals with fruits.

Parts of fruits and their relevant modern terms:

- *Vrinta*- peduncle
- *Jaalaka*-calyx
- *Valkalam*- Fruit wall
- *Salatu* -unripe portion
- *Vartaka*-locule
- *Bijapuplika* –septum
- *Bijapusa*- placenta
- Bija-seed etc.



## Based on consistency of fruit wall (*Phalavalkalam*)

- *Mrudula* (soft)
- *Maalura* (hard)
- *Angsula* (fibrous)
- *Sukacitam* (hairy)
- *Kantaka* (spiny)
- *Kilaka* (with projections)
- *Arvuda* (irregular)
- *Sandhita* (Dehiscent) and
- *Asandhita* (Indehiscent) types.



# Ch 1/6: *Phalaanga sutriyadhyaaya*

## फलांग सुत्रियाध्याय

### Classification of fruits:

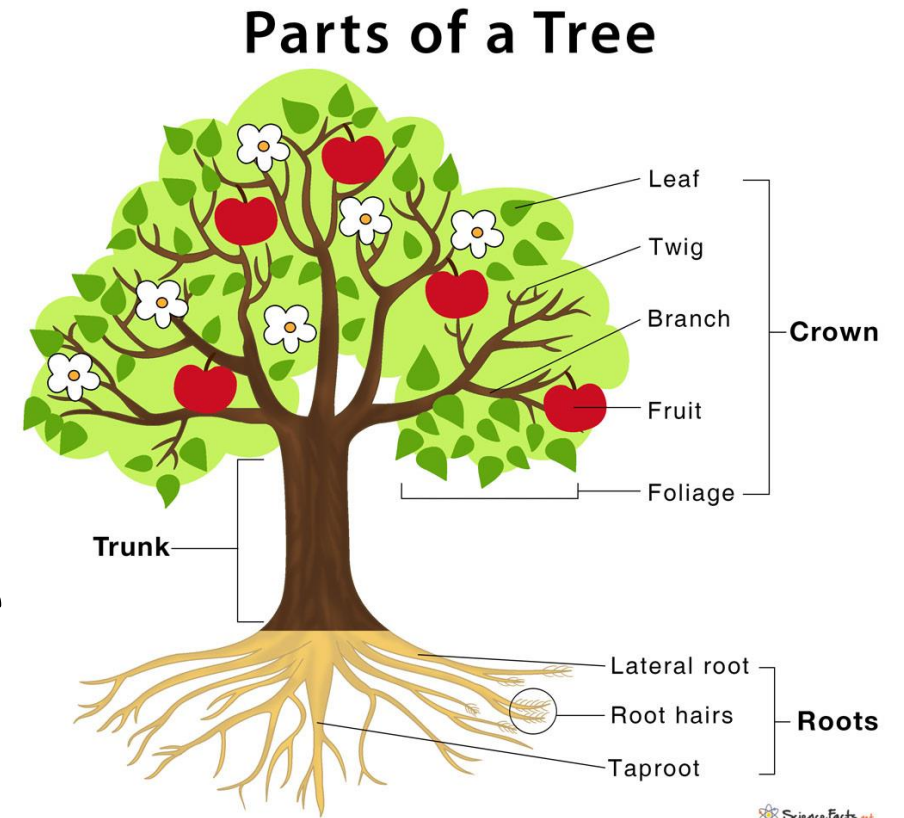
Based on shape, germination etc., various classifications of fruits have been mentioned. Some of them are

- *Phalgu phalam* फल्गु फलम्: Fruit developed on round thalamus e.g. Pome
- *Kumbha phalam* कुंभ फलम् Pitcher type fruit
- *Tripusha phalam* त्रिपुषा फलम्: Fruit with three placenta
- *Sringi phalam* श्रृंगी फलम्: Horn shaped fruit
- *Triputa phalam* त्रिपुट फलम् : Fruit with three chambers (Tricarpellary, Trilocular ovary e.g. *Euphorbia*, *Ricinus*)
- *Guccha phalam* गुच्छ फलम: Aggregated fruit
- *Sami phalam* सामी फलम: Fruit with seeds in lateral rows e.g. Legumes
- *Bijaka phalam* बीजक फलम-Fruit and seed are indistinguishable.

# Ch 1/7: *Ashtaanga sutriyadhyaya*

This chapter deals with eight plant parts namely

- *Mulam*- root
- *Twak*- the bark
- *Kaanda*- stem or trunk
- *Saara*- the heart wood
- *Swarasa*- the sap
- *Niryaasa*- exudates like oleo resinous substance
- *Sneha*- oleaginous substances or essential oils
- *Kantaka*- spine or prickle.



# Ch 1/7: *Ashtaanga sutriyadhyaya* अष्टांग सुत्रियाध्याय

Different varieties of roots like

- *Kastika* कास्तिक (woody)
- *Kandika* कंडिका (fleshy)
- *Granthika* ग्रंथिका (with knots)
- *Pratanika* प्रतानिका (spreading) etc., are described with examples.

On the basis of structure of bark (*Valkala*) classified like

- *Angsuka* अंगसुका (fibrous), *Patraka* पत्रका (paper like layers), *Paatala* पाताल (bark with several layers), *Mridulaganiya* मृदुलागणिया (soft), खगनिया *Kharaganiya* (rough), कंटकगणिया *Kantakaganiya* (with spines) etc., types.

## Different types of stems (*Kanda*) are classified as

- *Darvika kanda* दार्विका काण्ड -(woody stem)
- *Kilaka kanda* किलाका काण्ड (woody and spiny)
- *Asraka kanda* अशरक कांड (triangular)
- *Parvika kanda* पर्विका कांड (stem with numerous segments like bamboo)
- *Sausira kanda* सौसिरा कांड (hallow stem) etc.

Elaborative scientific description regarding

- *Saara* (heart wood),
- *Swarasa* (sap)
- *Niryaasa* (exudation)
- *Sneha* (oleaginous substance)
- *Kantaka* (spine or prickle) has been mentioned in this chapter.

# Ch 1/8: *Dwiganiya Adhyaya* द्विगणीय अध्याय

This chapter deals with seeds and seedlings.

Seed or *Bija* is divided into *Bijakosa* (equated to seed coat) and *Bijamatrika* (Cotyledon of seed). *Bijamatrika* is divided in to two types:

1. *Ekmantrika Bija* (Monocotyledons)

2. *Dwimantraka Bija* (Dicotyledons)

- *Bijasasyam* (Kernel)
- *Bijapatra* (First leaf with in the seed- Cotyledon).



Different shapes and colors of seeds are also described in this chapter.

- *Praroha*, *Udbheda* and *Ankura* are synonymous and can be taken as sprout.
- Scientific descriptions regarding development of seedling, their nourishment, vascular system of seedlings and seedlings types and their parts are also described.

## II VANASPATI KAANDA वनस्पति कांड

This is divided into 3 chapters namely

- Chapter1: *Vanaspati nirvarnana-adhyaya* वनस्पति निर्वर्णन-अध्याय
- Chapter 2: *Vrikshagan samgraha-adhyaya* वृक्षगण संग्रह-अध्याय
- Chapter 3: *Trinavarga-adhyaya*: तृणवर्ग-अध्याय

# Chapte2/1: *Vanaspati nirvarnana-adhyaya* वनस्पति निर्वर्णन-अध्याय

- Flowers are invisible (*Pushpamvyaktam, Apushpavanta*) पुष्पमव्यक्तम्, अपुष्पवंता
- The invisible flower of this group is also termed as Gudhapushpa गुढपुष्पा.
- Majority of these plants produce latex (*Kshirivraksha*) and also have special type of leaf called as Sunga.
- Many *Ficus* groups are included in this chapter. Ex- *Vata- Ficus benghalensis*, *Aswatta- Ficus religiosa* etc).

## Chapter 2/2: *Vrikshagan samgrahadhyaya*

### वृक्षागण समाग्रहध्याय

- These *Vanaspati plants* have been sub divided like plants with reticulate venation or parallel venation.
- Plants with or without latex, plants with **proper floral numbers or improper floral number**, with fertile or sterile flowers, with single seed fruit and many seeded fruit etc. were also described.

## Chapter 2/3: *Trinavarga-adhyaya* तृणवर्ग-अध्याय

- Plants with **parallel venation** (*Maunja-parna* मौजा-परना), fibrous fruit wall (*Angsuka phalavalkal*-अंगसुका फलावल्कल) are grouped under this chapter.
- It can be taken as the group of Arecaceae family. Ex. *Borassus flabellifer* (*Tala*), *Cocos nucifera* (*Narikela*), *Phoenix dactylifera* (*Kharjur*), *Areca catechu* (*Kramuka*) etc.
- Other varieties grouped in this *Trinavargha* belong to Poaceae family.

### III. VAANASPATYA KAANDA

#### वानस्पत्य कांड

Plants in which flowers are visible and bear fruits are grouped as Vaanaspatya वानस्पत्य which is further divided into various Ganas (families).

Characteristic feature of different families are mentioned in Sanskrit slokas.

**Based on these features they can be taken as**

**A. Chutapushpa gana चुटपुष्प गण:** Amra (*Mangifera indica*), Bhallataka (*Semecarpus anacardium*) etc. plants with hypogynous (Tundamandala) flowers and single seed are grouped under this Gana. This family can be compared with Anacardiaceae.

- A. Puplik pushpagana** (पुप्लिक पुष्पगण) with examples of Matulunga (*Citrus medica*) Nimbuka (*Citrus acida*) can be taken as Rutaceae.
- B. Deva pushpagana** (देव पुष्पगण) with example of Jambuka (*Syzygium cumini*) etc. can be taken as Myrtaceae family
- C. Aksha pushpagana** (अक्ष पुष्पगण) with example of Haritaki (*Terminalia chebula*) etc. can be taken as Combritaceae.
- D. Kuha pushpagana** (कुहा पुष्पगण) with examples of Kola and Badara (*Ziziphus species*) can be taken as Rhamnaceae

- F. *Mallika puspagana*** with example of Kutaja (*Holarrhena antidysentrica*) etc. resembles Apocynaceae family.
- G. *Samivarga*:** Sami vrikhsa bear Simbiphala (the legumes). These legumes are sub divided into:
- 1. *Vakra puspam group*** with Visamaganiya (Heteromerous) and Tunda mandala (Hypogynous) flowers ex: Paribhadra (*Erythrina indica*). This can be taken as Papipilionaceae.
  - 2. *Vaikarnika puspam*** can be taken as Caesalpiniaceae with the characteristic feature of the group and example like Aragvadha (*Cassia fistula*).
  - 3. *Suka puspam*** can be taken as Mimosaceae with characteristic features like hairs on flowers etc., and examples like Sirisa (*Albizzia lebbeck*)



## IV GULMAKSUPA KAANDA

### गुल्मक्षुप काण्ड

Shrubs with short branches come under this Kaanda.

**Important chapter in this Kaanda is Dalvajavaragadhyay:**

- Plants habitat of moist and clayey soil comes under this group.
- These plants are Rhizomatous (Kanda-rohakam कंडा-रोहकम), with tortoise shaped leaves (Kamatha-cchhadam कामथ-च्छदम्) and causes itching (Kandula).

This group will have spadix type of inflorescence (Aksa manjariअक्सा मंजरी ). It is again divided into 4 types:

1. *Maanaka* माणकः Ex. *Alocasia indica*,
2. *Granthila* ग्रंथिलाः Ex -some *Colocasia species*
3. *Khaanda karna* खंडा कर्णः Ex - *Centella asiatica*
4. *Valli kandula* वल्ली कंडुलाः Ex -*Colocasia antiquorum*

## V. VIRUDHA VALLI KAANDA

### विरुद्ध वल्ली कांड

This chapter mainly deals with **climbers and creepers**. Some of the plant names mentioned in this *Kaanda* and the probable botanical names are as follows:

- *Chandravalli* चंद्रवल्ली - *Hiptage benghalensis* Madhvi lata.
- *Bhadravalli* भद्रवल्ली - *Paederia foetida* (prasarini)
- *Kandavalli* कंडवल्ली - *Ipomoea paniculata* (Vidari)

- *Kashthavalli* काष्ठवल्ली - *Berberis aristata* (Daruharidhra)
- *Kantavalli* कांटावल्ली - *Asparagus racemosus* (Satavari)
- *Chinnaruha valli* चिन्नरुह वल्ली - *Tinospora cordifolia* (Guduchi)
- *Triputa valli* त्रिपुटवल्ली - *Operculina turpethum* (Tivrit)
- *Akashavalli* आकाशवल्ली - *Cassytha filiformis*
- *Kshiravalli* क्षीरवल्ली - *Ipomoea paniculata*
- *Gucchaphala valli* गुच्छफला वल्ली - *Vitis vinifera* (Draksha)
- *Manjuvalli* मंजुवल्ली - *Rubia cordifolia* (Manjistha)

# DISCUSSION

- Many of the *Sutras* (Stanzas) of the original text provide information, which is most scientific to present era.
- The morphology, classification and nomenclature of plants amaze the scientific world regarding the traditional wisdom and command on plant science.
- Description of the origin of life shows ancient scholars close monitoring of the nature and their zeal regarding evolutionary theories.
- Classification of lands, distribution of forests in this text shows the ecological knowledge.
- Minute observations of plant morphological structures, their naming in a scientific way like- leaf structures, flower types, leaf types, leaf parts, flower parts, cellular structure of leaf etc. are still amazing.
- Eight plant parts description; seed, seedlings, classification of plants, physiological topics like transporting system etc. described in Sanskrit *Slokas* (stanzas) surprises present day scientific fraternity.

- Our ancient scholars were having immense knowledge in Many scientific branches. Vrikshaayurveda is one among them.
- At present in comparison with advanced scientific knowledge of Botany this text may appear primitive work. The scientific world should think how they developed these techniques and knowledge in early times.
- Research should also be done on the way of the author in developing this traditional knowledge with minimum infrastructures and facilities.
- There was no contemporary scientific developments in the field of Botany before 18<sup>th</sup> or 19<sup>th</sup> Century in comparison to *Vrikshaayurveda*.
- The total wisdom of this work should be enlightened to the global scientific world for further research in plant science.
- It is country pride that India has its seeds for world developmental Botany in many facets.

# CONCLUSION

- There is a need of deep study of this text in multi disciplines including Ayurveda.
- Every scientific description of this text should be highlighted to global level in order to make Indian wisdom popular.
- Let the scientific world know that the origin of plant science lies in Indian traditional knowledge.
- It is worthy to make this *Vriksayurveda* as a subject in P.G and U.G. levels not only to Botany but also to Ayurvedic students.
- Steps should also be taken to consider Rishi Parasara, the author of this text, as the ***Father of Botany*** as a whole and in particular to many branches of Botany.

