

## Twaka Śārīra

### **Twak:**

Jānu Sandhi is covered by twak externally. Jānu Basti is the procedure done over the Twak. Absorption of the Auśadhī is carried out through Twak only and hence it is very important to study the Twak Śārīra.

### **Etymology of Twak:**

The word Twacā is derived from “Twacā Samvarane” means, the one, which covers entire body.

### **In View of Āyurveda:**

Twak is Sthāna of Sparśanendriya. Twacha, Carma words are also used for the skin in all Āyurveda classics. It is one of the Indriyadhiṣṭāna which completely covers Meda, Śoṇīta, and all other Dhātus of the body. It is Śoṇīta and all other Dhātus of the body and gets spread all over the body. It is considered as the seat of Sparśanendriya as well as one among the main seat of Vāta Bhrājak Pitta is also situated in Twak.

### **Formation of Twak:**

According to Caraka, Twak is the Upadhātu of Maṃsa and therefore twak is the ultimately formed by Maṃsa. According to Suṣrūta, at the time of fertilization Śukra, Śoṇīta and Ātmā become united for the production of Garbha. Its growth is rapid and nourished by Tridoṣa. Seven folds of the layers of Twak are formed and deposited on this rapid transforming product in the same manner as the layers of cream are formed and precipitated on the surface of the boiling milk.

According to Vāgbhata, Twak is formed by the Pāka of Rakta Dhātu by its Dhātwaṅni. After the Pāka of Rakta, Rakta become dry in the form of Twak like the deposition of cream on the surface of the boiling Milk. Thus is also called as “Rakta Santānika”.

### **Layers of Twak:**

There are some different opinions regarding the number of the layers of the Twak among the ancient. Ācārya Caraka has mentioned six layers of skin but only first two layers are named and rest of the four layers are counted as producing diseases.

1.Udakadharā , 2.Aṣṛūkadharā,3. Tṛitiya,4.Caturtha,5.Pancamī,6.Ṣaṣṭī

Ācārya Suṣṛūta has mentioned seven layers of skin along with their specific name,thickness and prone origination of the disease<sup>1</sup>.

1.Avabhāsini,2.Lohitā,3.Śwetā,4.Tāmra,5.Vedinī,6.Rohini,7.Maṃsadharā

Ācārya Vāgbhata has also described seven layers of skin but names are not mentioned.commenting on Vāgbhata, commentator Arundatta and Hemādri have named them according to nomenclature given by Suṣṛūta.

Śarngadhara has mentioned seven layers of the skin along with the probable onset of disease. The name of first six layers is same as Suṣṛūta but 7<sup>th</sup> layer is called Sthūlā.

**Table No 9: Layers of Skin:**

Sr. No	Layer Name	THICKNESS	Parallel Nomenclature	
1	Avabhāsini	1/8 <sup>th</sup> Vṛīhī	Horny Layer	EPIDERMIS
2	Lohitā	1/16 <sup>th</sup> Vṛīhī	Stratum Lucidium	
3	Śwetā	1/12 <sup>th</sup> Vṛīhī	Stratum Granulosum	
4	Tāmra	1/8 <sup>th</sup> Vṛīhī	Malphigian layer	
5	Vedinī	1/5 <sup>th</sup> Vṛīhī	Papillary Layer	DREMIS
6	Rohini	1 Vṛīhī	Reticular layer	
7	Maṃsadharā	2 Vṛīhī		

## **KRIYĀ SHĀRĪRA:**

### **Twak and Tridoṣa relations:**

**1. Vāta doṣa:-**Vāta Doṣa has definite relation with Twacā, as it is Adhaiṣaṭana of Sparṣanindriya<sup>2</sup>, Udāna Vāyū is responsible for Varṇa.

### **2. Pitta doṣa:-**

Prabhā is the main function of Pitta Doṣa and Twacā is the Sthāna of Pittadoṣa. When Pitta gets vitiated, and then Twaca becomes Pīta Varṇa and when Pitta Kṣaya occurs then lakṣaṇās like Prabhāhāni are seen<sup>3</sup>.

### **Bhrājaka Pitta:-**

Twacā is Sthāna of Bhrājaka Pitta, as it responsible for colour & complexion of Twacā. The drugs used for Abhyanga, Pariṣeka, Lepa, Avagāha etc are absorbed with the help of Bhrājaka Pitta.

### **Ranjaka Pitta:-**

By its Rasaranjana karma, indirectly Ranjaka Pitta gives varṇa to Twacā.

### **3. Kapha doṣa:-**

Kaphapradhāna Prakṛūtī person are attractive, which indicates that kapha is mainly responsible for luster and texture of the Twacā.

### **Twak and Dhātu relations:-**

#### **Rasa:-**

The Sāra of Rasa Dhātu is assessed by looking in to the skin and the Roma, Twak Roukṣatā is the sign manifested in the Rasa Kṣaya, Śaithya is generated as a result of Rasa Dātu Vṛuddhī. Hence it is postulated that Twacā is nourished by Rasa Dātu and it is responsible for the maintenance of the temperature of the body in its normalcy.

#### **Rakta:-**

Among its functions Varṇa Prasādana (provide colour of skin) and Māṃsa Puṣaṭī have been mentioned. The manifestation of Raktapṛadoṣaja Vyādhis like Viśarapa, Vyanga, Tilakālaka etc, occurs through Twacā which indicates the relation between Twacā and Rakta.

#### **Māṃsa:-**

The Prasāda Bhāga of Māṃsa nourishes the Twacā, as it is the Upadhātū of Māṃsadhātū. Twacā is Mūla of Māṃsavaha Srotas.

#### **Majjā:-**

The Majjāsāra person is having Snigdha Twacā and Twacā Sneha is Majjāmala. It establishes a relation between Twacā and Majjā.

#### **Śukra:-**

If the parental Śukra is like Ghṛtavat, Tailavat or like Madhū then in the future the child gets Gaura, Kṛaṣaṇa or Śyāma Varṇa respectively.

### **Twak and Mala relations:**

#### **Sweda:**

It is Mala of Meda, which is excreted through Twacā. It is said as Udaka Swarūpa Maladravya which gets Niṣpātana from the Romakūpa and Twakrandra. The Kārya of Sweda is told as maintenance of Śārīra Ādratā and Twak Soukumāryatā. The Kṣaya and Vṛūddhī Lakṣanās of Sweda are manifested in the Twacā only.

## Anatomy and Physiology of Skin

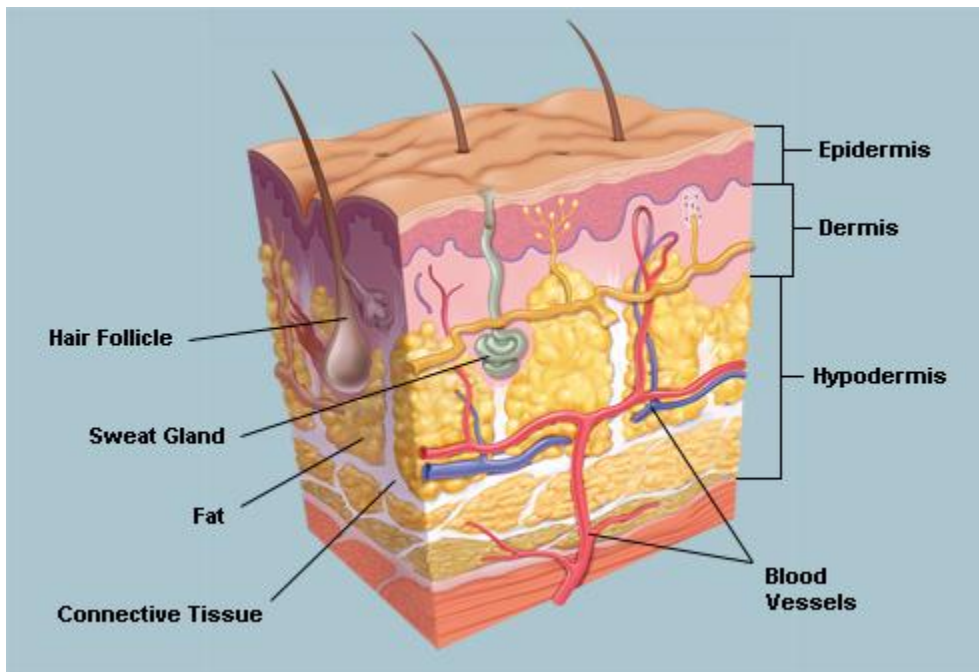
### **In view of modern Science:**

Skin is one of the largest organs of the body in surface area and weight. In adults, the skin covers an area of about 2 square meters and weighs 4.5 to 5 kg. It ranges in thickness from 0.5 to 4.0 mm, depending on location.

### **Anatomy of Skin**

The skin is the largest organ of the body, with a total area of about 1.8 square metres (20 square feet). The skin protects us from microbes and the elements, helps regulate body temperature and permits the sensations of touch, heat and cold.

Fig.No.6



Skin has three layers:

### **Epidermis**

The epidermis, the outermost layer of skin, provides a waterproof barrier and creates our skin tone.

### **Dermis**

The dermis, beneath the epidermis, contains tough connective tissue, hairfollicles and sweat glands.

### **Hypodermis**

The deeper subcutaneous tissue (hypodermis) is made of fat and connective tissue.

Other components of the skin include:

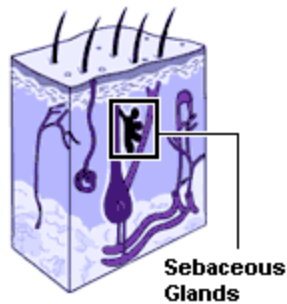
### **Blood vessels**

To help keep your body a constant temperature, blood vessels in the skin dilate in response to heat or constrict in response to cold.

### **Sebaceous glands**

The sebaceous glands secrete sebum, an oily substance that helps keep skin from drying out. Most of the glands are located in the base of hair follicles. Acne starts when the tiny hair follicles become plugged with these oily secretions.

Fig.No.7



### **Sweat gland**

When your body gets hot or is under stress, these glands produce sweat, which evaporates to cool you. Sweat glands are located all over the body but are especially abundant in your palms, soles, forehead, and underarms. The apocrine glands are specialised sweat glands that emit an odour.

### **Hair follicle**

Every hair on your body grows from a live follicle with roots in the fatty layer called subcutaneous tissue.

### **Collagen**

Collagen is the most abundant protein in the skin, making up 75% of your skin. This is also your fountain of youth as it's responsible for warding off wrinkles and fine lines. Over time, environmental factors and ageing diminish your body's ability to produce collagen.

### **Elastin**

When you hear the word elastin, think elastic. This protein is found with collagen in the dermis and is responsible for giving structure to your skin and organs. As with collagen, elastin is affected by time and the elements. Diminished levels of this protein cause your skin to wrinkle and sag.

### **Keratin**

Keratin is the strongest protein in your skin. It's also dominant in your hair and nails. Keratin is what forms the rigidity of your skin.

### **Colour**

The skin's colour is created by special cells called melanocytes, which produce the pigment melanin. Melanocytes are located in the epidermis.

### **Skin conditions**

**Rash:** Nearly any change in the skin's appearance can be called a rash. Most rashes are from simple skin irritation; others result from medical conditions.

**Dermatitis:** A general term for inflammation of the skin. Atopic dermatitis (a type of eczema) is the most common form.

**Eczema:** Skin inflammation (dermatitis) causing an itchy rash. Atopic eczema (a type of dermatitis) is the most common form.

**Psoriasis:** An autoimmune condition that can cause a variety of skin rashes. Silver, scaly plaques on the skin are the most common form.

### **Physiology of the Skin:**

**The skin is a window through which the physician can "see" the entire body.**

Skin is the most noticeable physical part of our body. By **having healthy skin, the effects of aging is reduced, naturally your skin -- and you-- look better. People who are healthy look better. When you are healthy and feel good, you radiate good health**

**and confidence.** And obviously, nice skin, well-toned physique, and great posture look better than skin that hasn't been nourished.

### **The epidermis**

- the top most layer of

#### **skin**

-0.1 to 1.5 mm

#### **thickness**

- It is made up of 4

#### **layers:**

1. basal cell layer,
2. squamous cell layer
3. stratum granulosum
4. stratum corneum.

### **Melanin**

Produces by melanocytes (specialized cells in the basal cell layer)

- Protects the skin against sun damage
- Rate of production determines skin color—the more melanin produced in the skin, the darker the skin appears.
- Melanin production increases when skin exposure to the sun (in an effort to shield the skin from the damaging ultraviolet rays; suntan effect).
- Caused freckles, birthmarks, and age spots (pathes of melanin within the skin).

### **The Skin Renewal Process**

- The 4 layers are continually rebuild the surface of the skin from within
- The continuous process maintain the skin's strength and helping thwart wear and tear.
- In the average adult, it takes nearly a month for the stratum corneum to be completely replaced.
- The replacement process generally slows with age, though in some people it becomes abnormally accelerated, causing a flaky, scaly skin condition known as psoriasis.

### **Dermis**

- Lies beneath the epidermis



- 1.5 to 4 mm thick (the thickest of the three layers of the skin).
- Home to most of the skin's structures, including sweat and oil glands, hair follicles, nerve endings, and blood and lymph vessels.
- The main components of the dermis are collagen and elastin.
- Storage much of the body's water supply
- When the amount of stored water is increased, the skin becomes tight and stretche.
- The dermis also contains scavenger cells from the immune system.
- In the event that a foreign organism makes it past the epidermis, these cells will engulf and destroy it.

#### Sweat glands

##### • **Two types:**

- the apocrine glands and the eccrine glands.
- Apocrine glands
  - are specialized glands found only in the armpits and pubic region. In animals, it is the apocrine glands that secrete the scents used to attract a mate; however, no one is sure of their function in humans.
  - secrete a milky sweat that encourages the growth of bacteria responsible for body odor.
  - These glands are activated at puberty when stimulated by hormones.

##### **The eccrine glands**

- The true sweat glands.
- Found over the entire body,
- regulate body temperature by bringing water via the pores to the surface of the skin, where it evaporates and releases heat.
- Respond to heat, exercise, and fever
- Respond to emotional stress, (such as those on the palms).
- give you clammy hands when you're nervous.
- Eccrine glands function from childhood, though they do increase their activity at puberty.
- Though these glands can produce up to two liters of sweat an hour when they're working at their full potential, they're not usually to blame for body odor.

- These glands secrete mostly water, which doesn't encourage the growth of odor-producing bacteria.

### **The Sebaceous or Oil Glands**

- Attached to hair follicles, cylindrical structures that house the roots of the hair.
- Can be found everywhere on the body except for the palms of the hands and the soles of the feet.
- Usually called into action by hormones during puberty
- Secrete oil that helps keep the skin smooth and supple.
- The oil also helps keep skin waterproof and protects against an overgrowth of bacteria and fungi on the skin.
- At times, these glands overproduce and cause acne, a condition in which pores become clogged and inflamed

### **Nerve Cells**

- Nerve endings can also be found in the dermis
- Responsible for the sense of touch, relaying information to the brain for interpretation.
- Signal temperature to the brain and, if necessary, trigger shivering, an involuntary contraction and relaxation of muscles. This muscle activity generates body heat.

### **Blood and Lymph Vessels**

- The blood vessels bring nutrients and oxygen to the skin and remove cell waste and cell products.
- The blood vessels also carry the vitamin D produced in the skin back to the rest of the body.
- Enlarged vessels that can be seen through the skin are known as spider veins or varicose veins.
- Broken blood vessels appear as bruises.
- The lymph vessels bathe the tissues of the skin with lymph, – a milky substance that contains infection-fighting immune system cells. The cells work to destroy any infection or invading organisms as the lymph gradually circulates back through the body's tissues to the lymph nodes.

### **Collagen**

- Collagen is a tough, insoluble protein found throughout the body in the connective tissues that hold muscles and organs in place.
- In the skin, collagen supports the epidermis, lending it its durability

### **Elastin**

- A protein that keeps the skin flexible.
- The substance that allows the skin to spring back into place when stretched – (the scientific reason a funny face won't stay that way)
- The properties of collagen and elastin fade with age, giving rise to wrinkles and sagging skin.

### **Hypodermis**

- The subcutaneous tissue (hypodermis) is the deepest layer of the skin.
- It is missing on parts of the body where the skin is especially thin—the eyelids, nipples, genitals, and shins.
- Subcutaneous tissue acts both as an insulator, conserving body heat, and as a shock absorber, protecting internal organs from injury.
- It also stores fat as an energy reserve in the event extra calories are needed to power the body.
- The blood vessels, nerves, lymph vessels, and hair follicles also cross through this layer.