



# A STUDY OF STRUCTURES AND FUNCTIONS OF TWAK: A AYURVEDIC LITERATURE REVIEW

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## Abstract:

Twak is the outermost protective layer as well as largest sensory organ of body. Acharya Susrutha and Acharya Charaka described its layers according to their functions and diseases, which are related to those layers. It is the location of sweat channels, hairs and hair pits. It is the largest organ constituting 15-20% of total body mass. Twak is one of the Indriya Adhishtana. After this study. Twak layers can be compared with skin. Avabhasini and Lohitha as Stratum Corneum, Sweta as stratum lucidum, Tamra as stratum spinosum and stratum granulosum, Vedini as stratum basale and papillary dermis, Rohini as reticular Dermis and Mamsadhara Twak as Superficial fascia and function of Skin are Thermoregulation, Protection, Sensation, Excretion and Absorption.

## Introduction:

The skin, also known as the cutaneous membrane is the largest organ of the body, with a total area of about 20 square feet, and weighs 4.5-5kg, about 16% of total body weight. Skin is known as "The First Line of Defence" as it protects us from microbes and other invading elements.

Skin performs many functions, it perceives touch sensation and responds, covers the whole body, protects from external shock, maintains the thermostat of the body, and the circulatory process of the body, Swedvahi strotas helps in sweating thus maintaining body temperature, provides nourishment to the hair, helps in the detoxification process, maintain rigidity and integrity of the body.

Twacha is predominant with Vayu mahabhut since it is Upadhatu of Mansa, Lomkupas is related with Akashans and Sparsh sensation is associated with Vyan Vayu. Bhrajak pitta provides luster and color to the skin, while excess aggravation of Vayu is responsible for dark coloration, and whiteness of skin is related with excess of Kapha Dosha. Skin is related with Sweda (sweat) which is considered as Mala of skin and the excretion of Sweda through Twacha contributed towards the detoxification of the body.

The skin is the one organ of the body that is readily available from inspections by the eyes & fingers of every living person. It is a link between the internal and external environment and is also the seat of complexion, which maintains beauty and personality. It provides individual identity in society. As the largest organ of the body and being on the surface, it is directly exposed to microorganisms. By hampering the beauty of a person, it creates social and psychological impairments.

### Definition of Twach

- त्वचते संवीर्यते देहे अनया । (वाचस्पत्यं)

Twacha is that which completely covers Medas, Shonita and all other dhatus of body.

### Synonyms of Twacha<sup>1</sup>

- ✓ **Charma:** - A basonym for twak, probably cognate to derma of Greek; implying the dynamic nature of skin.
- ✓ **Sparsadhi sthana:** - The substratum for the tactile sensation.
- ✓ **Tanu:** - The thin and the stretched out
- ✓ **Ashrikdhar:** - The messenger of blood meaning blood flows through skin.
- ✓ **Tvag:** -The outer most covering of body. This also indicates the movements of skin in the form of pulsatility and responsiveness.
- ✓ **Chhadani:** -Means to cover.

### Utpatti of Twak<sup>2</sup>

Regarding utpatti of Twak Acharya Sushruta described that fertilization of sperm and ovum, development takes place and consequently seven layers of Twak comes into existence like those of cream over the surface of milk. Here analogy of cream and milk is given to explain the entire concept of formation of skin. Acharya Vagbhatta described Twak utpatti due to the paka of rakta dhatu by its dhatvagni in the foetus. After paka, it dries up to form Twacha, just like the deposition of cream (Skim) over the surface of boiled milk.

### Structure of Twak

Opinion of number of Layers of Twak from Different Ayurvedic classics. Twak is composed of many layers and there is a bit controversy regarding number of layers in different Ayurvedic classics. Different opinions are as follows

- 1) Charak Samhita- 6 layers
- 2) Sushruta Samhita- 7 layers
- 3) Ashtang Hridaya- 7 layers
- 4) Ashtanga Samgraha- 6 layers
- 5) Sharangdhara- 7 layers
- 6) Bhavprakash- 7 layers
- 7) Kashyap-6 layers

### Layers of Twak:<sup>3,4,5,6</sup>

CHARAK	SUSHRUTA	ASTANG HRIDYA	ASTANG SANGRAH	SHARANGDHAR
<i>Udakdhara</i>	<i>Avabhāsini</i>	<i>Bhāsini</i>	<i>Udakdhara</i>	<i>Avabhāsini</i>
<i>Asrukadhara</i>	<i>Lohita</i>	<i>Lohita</i>	<i>Asrukadhara</i>	<i>Lohita</i>
<i>Tritiya</i>	<i>Sveta</i>	<i>Sveta</i>	<i>Tritiya</i>	<i>Sveta</i>
<i>Chaturtha</i>	<i>Tamra</i>	<i>Tamra</i>	<i>Chaturtha</i>	<i>Tamra</i>
<i>Panchmi</i>	<i>Vedini</i>	<i>Vedini</i>	<i>Panchmi</i>	<i>Vedini</i>
<i>Shasti</i>	<i>Rohini</i>	<i>Rohini</i>	<i>Shasti</i>	<i>Rohini</i>
	<i>Mamasadhara</i>	<i>Mamasadhara</i>		<i>Sthula</i>

### Measurement of Twak Layers:<sup>7</sup>

LAYER OF TWAK	SUSHRUTA ( <i>Vrihi</i> )
<i>Avabhāsini</i>	1/18
<i>Lohita</i>	1/16
<i>Sveta</i>	1/12
<i>Tamra</i>	1/8
<i>Vedini</i>	1/5
<i>Rohini</i>	1
<i>Mamasadhara</i>	2

### Panchapanchaka siddhant

- Indriya: Sparshanendriya.
- Dravya: Vayu.
- Adhishthan: Twak Indriyarth: Sparsha
- Buddhi: Sparsha buddhi.

## Kriyatamaka aspect of Twacha:

In Kriyatamaka aspect, to examine the role of skin, we will have to assess the effects of dosha, dhatus and malas.

Bhrajaka pitta present in twacha is responsible for lusture of the twacha. The pittadosha vrddhi in the body results in yellowish discoloration of the twacha<sup>8</sup> whereas its kshaya results in the loss of lusture of the twacha.<sup>9</sup> Vatadosha vrddhi in the body results in karshanyam of twacha and kapha vrddhi causes shaukalyam (whitish discoloration) and shaityam (coldness of twacha). Kapha kshaya results in rukshata(dryness).<sup>10</sup>

According to Acharya Charaka, twacha is the mula of mamsavahasrotas<sup>11</sup> and updhatu of Mamsadhatu.<sup>12</sup> Rasa and Rakta dhatus are indirectly related to twacha. While describing the Ashtasaarpurush, Acharya Charak considered Twaksaarpurush instead of Rasasaarpurush.<sup>13</sup> Vitiation of Rakta Dhatu leads to skin diseases like Visapra, Kustha, Vyanga etc. while in kshaya of Rakta dhatu in the body results in twakaparushyam (rough skin). The presence of shudh Shukra in the body is also reflected by the lusture of the twacha.<sup>14</sup>

The skin retains water and keeps itself moist. Thus, presence of sweda indicates that it is mala of twacha which is essential for maintaining the moisture content, tonicity and elasticity of the skin. Sweda kshaya results in dryness and cracks in the skin whereas Sweda vrddhi results in pruritus.<sup>15</sup>

## Twacha as Rogamarga:

Acharya Charaka describes Bahya, Madhyamand Abhyantara as three Rogmargas. Twacha is included in Bahya Rogmarga as it is outermost layer and first line of defence and every element in external environment will come in contact with twacha first.

## Correlation of Layers of Twacha:<sup>16</sup>

The correlation of Twacha layer in Ayurveda with modern sciences as per mentioned by Ghanekar, the commentator of Sushruta Samhita Shareersthana, which is as follows:

- Avabhasini- Stratum corneum
- Lohita- Stratum Lucidum
- Shveta- Stratum Granulosum
- Tamra- Malpighian Layer
- Vedini- Papillary Layer
- Rohini- Reticular Layer
- Mamsadhara- Subcutaneous tissue

**Function of Skin:**

1. Thermoregulation
2. Blood Reservoir
3. Protection
4. Cutaneous sensation
5. Excretion and Absorption
6. Synthesis of Vitamin D

**Conclusion:**

The study of Twacha Shareer in both Ayurveda and modern sciences provides a well-established concept about the normal anatomy and physiology of Twacha to know the Vikriti of Twacha. Description of Twak in classical texts and modern texts have tremendous similarity regarding numbers, layers etc. There is much more wide area still to be covered. According to Acharya Sushruta there are seven layers of skin which is same as that of modern science (5 layers of epidermis + 2 layers of dermis). The layers of Twak described by Acharya Sushruta and their names match with the layers of skin anatomically and physiologically. Indriya panchapanchak and factors causing pratyaksha gyan can be used as a tool to understand physiology of Gyan grahan prakriya of any sense organ.

<sup>1</sup> Parishadya shabadarth shariram by pt. Damodar Sharma Goud published by Baidyanath Ayurved bhavan limited Nagpur; second edition, 1979. 165-167.

<sup>2</sup> Kaviraja Atrideva Gupta: Chaukhamba Prakashan, Varanasi; Edition: reprint, 2015; 122 9. Ashtanga Hridayam of Vagbhata Sutra Sthana; Kaviraja Atrideva Gupta; Chaukhamba Prakashan, Varanasi; Edition: reprint, 2015; 115.

<sup>3</sup> Tiwari. P. V, Charaka Samhita, English translation of text with Ayurvedadipika, 1 edition-2020.

<sup>4</sup> Vasant. C. Patil, Maharshi Sushruta's Sushruta Samhita, Text with English translation, 1 edition-2018, Chaukhambha publications, Varanasi.

<sup>5</sup> Jyotirmitra, Srimad Vagbhata virachita Ashtanga Sangraha (Sanskrit text with hindi translation), Reprint-2016, Chaukhambha Sanskrit series office, Varanasi.

<sup>6</sup> Sri Prayagdatta Sharma, Sharngdhara viracita Sharmgdhara Samhita (Sanskrit text with hindi translation), 7th edition, Chaukhambha Amarabharti Prakashana, Varanasi.

<sup>7</sup> Vasant.C. Patil, Maharshi Sushruta's Sushruta Samhita, Text with English translation, 1st edition- 2018, Chaukhambha publications, Varanasi; page-155.

<sup>8</sup> Ashtanga Hridayam of Vagbhata Sutra Sthana; Kaviraja Atrideva Gupta: Chaukhamba Prakashan, Varanasi; Edition: reprint, 2015; 122

<sup>9</sup> Ashtanga Hridayam of Vagbhata Sutra Sthana; Kaviraja Atrideva Gupta; Chaukhamba Prakashan, Varanasi; Edition: reprint, 2015; 115

<sup>10</sup> Ashtang Hridayam Nirmala, commentary by Dr. Brahmanand Tripathi reprinted Sutra Sthana ch. 2003; 11(5-6):161.

<sup>11</sup> Charaka Samhita Vimana Sthanam; Prof. P.V. Sharma: Chaukhamba Orientalia, Varanasi: 9<sup>th</sup> edition, 2005; 330

<sup>12</sup> Charak Samhita, Vidyotini hindi commentary by P. Kashinath shastri and Dr. Goraknath Chaturvedi, published by Chowkhambha Sanskrit sansthan Varanasi Charak Chikitsasthana ch. 2007; 15: 16-17-18-19:456.

<sup>13</sup> Charak Samhita, Vidyotini hindi commentary by P. Kashinath shastri and Dr. Goraknath Chaturvedi, published by Chowkhambha Sanskrit Sansthan Varanasi reprint edition Charak Vimana sthana ch. 2007;8(103):775.

<sup>14</sup> Charaka Samhita Vimana Sthanam; Prof. P.V. Sharma: Chaukhamba Orientalia, Varanasi; 9th edition. 2005; 379

<sup>15</sup> Sushrut samhita Sutrasthana; Prof. K.R. Srikantha Murthy: Chaukhamba Orientalia, Varanasi, 2nd edition, 2004; 99

<sup>16</sup> Ghanekar's commentary on Sushruta Samhita Sharirsthana "Ayurveda Rahasya Deepika" by Dr. Bhaskar Govind Ghanekar, published by Meherchand prakashan Delhi reprinted edition, Sushruta sharirsthana ch. 2007; 4(3):107.

