

## SKIN IMMUNITY - A CONCEPTUAL STUDY

Padmavati Venkatesh<sup>1</sup>, Priyanka Bhadargade<sup>2</sup>, Prashant A.S.<sup>3</sup>

<sup>1</sup>Professor, Department of Panchakarma, Ayurveda Mahavidyalaya, Hubli, Karnataka, India

<sup>2</sup>PG Scholar, Department of Panchakarma, Ayurveda Mahavidyalaya, Hubli, Karnataka, India

<sup>3</sup>Professor, Principal and HOD, Department of Kayachikitsa, Ayurveda Mahavidyalaya, Hubli, Karnataka, India

Corresponding Author: [bhadargadepriyanka27@gmail.com](mailto:bhadargadepriyanka27@gmail.com)

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## ABSTRACT

Skin is the mirror of the human body as it reflects one's emotions, glamour, some aspect of physiology, inner health or disorder. Skin plays a vital role in maintaining body temperature, sensory and protective functions etc. Skin is prone to get damaged due to its location. In India, 7.9% to 60 % population suffer from skin diseases.<sup>[1]</sup> To protect skin it is essential to know about skin and skin Immunity in detail. Skin immunity can be improved by adopting *Abhyanga, Lepa, Parisheka, Shodhan* like *Vaman, Virechana, Raktamokshana* along *Rasayan* therapy.

**Keywords:** Skin, *Tvacha*, Immunity, *Vyadhikshamatva*.

## INTRODUCTION

Skin is an important organ of the integumentary system. Healthy and glossy skin increases the confidence of an individual. Skin act as a physical barrier between the external and internal environment of the body. The skin helps to maintain constant body temperature, acts as a protective layer of the body and provides sensory information about the surrounding environment. Among all body organs, skin is more easily inspected,

exposed to infection as well as external injury. Although its location makes it vulnerable to damage from trauma, sunlight, microbes and pollutants in the environment, the skin's protective feature wards off such damage. Changes in skin colour indicate a homeostatic imbalance in the body. Abnormal skin eruptions or rashes reveal systemic infection or diseases of internal organs. Some conditions like warts, age spots or

pimples may involve the skin alone. Healthy skin is essential for an attractive personality so people spend a great deal of time and money to restore and maintain it to a normal or youthful appearance.<sup>[2]</sup>

### Aim and Objectives-

1. To understand skin in detail as per Ayurveda with parlance with modern science.
2. To describe in detail skin immunity.

**Study Type** - It is conceptual literary Research.

### Material and Method –

Literature collection was done from *Brihat Samhita* with commentaries, *Sharangdhara Samhita*, Modern physiology textbooks, web sources and articles.

### Tvak Rachana Sharira –

*Tvacha* is one among *Gyanendriya*<sup>[3]</sup> responsible for the touch, temperature and pressure sensation. It is originated from *Matruja Bhava*<sup>[4]</sup> formed in seven layers by digestion of *Shukra* and *Shonita* in the *Garbhashaya*.<sup>[5]</sup> *Tvacha* is formed as *Upadhatu* of *Mamsa Dhatu* by the action of *Mamsa dhatvagni*.<sup>[6]</sup> According to *Vagbhata* *Tvacha* is formed by *Paka* of *Rakta Dhatu* by *Raktagni* in the foetus. After *Paka*, it dries up to form *Tvacha*, just like the deposition of cream over the surface of boiled milk.<sup>[7]</sup>

### Tvak Utpatti Kala-

*Charaka* opines that *Mamsa Dhatu Vriddhi* and *Varna Utpatti* occurs in the 5<sup>th</sup> and 6<sup>th</sup> month of foetal life respectively. *Tvacha Utpatti* gets completed up to the 6<sup>th</sup> month of foetal life<sup>[8-9]</sup>.

### Panchabhautikatwa of Tvak<sup>[10]</sup>

1. *Vayu Mahabhuta – Sparshana* (sensation of pain, temperature and pressure)
2. *Akasha Mahabhuta – Romakupa* and *Swedavaha Strotas*.
3. *Prithvi Mahābhuta - Stula, Sthira* and *Murtimant Guna*.
4. *Apya Mahabhuta- Mrudu, Snigdha*.
5. *Teja Mahabhuta - Varna* of skin.

### Skin Anatomy –

Skin is the largest organ which covers 2 sq. meters and weighs about 7% of adult body weight. It consists of 1. Epidermis- The thinner superficial avascular layer composed of epithelial tissue as keratinocytes, melanocytes, intraepidermal microphages and tactile epithelial cells. The epidermis consists of five layers-Stratum basale, Stratum spinosum, stratum granulosum, stratum lucidum and stratum corneum. 2. Dermis- Deeper, thicker, vascular layer, composed of dense irregular connective tissue containing collagen and elastic fibres. This woven Fibrous network has great tensile strength and the ability to stretch and recoil easily. Blood vessels, nerves, glands and hair follicles are embedded in the Thin superficial papillary and Thick deeper reticular region of the dermal layer. The dermis consists of Hypodermis - a subcutaneous layer deep to the dermis formed by areolar and adipose tissues. Fibres extend from the dermis anchor the skin to the subcutaneous layer attach to underlying fascia, connective tissues around muscles and bone. This layer also contains nerve endings -lamellated corpuscles or Pacinian corpuscles that are sensitive to pressure.<sup>[11]</sup>

**Table 1:** Skin layer and diseases according to different Acharya<sup>[12]</sup>

	Charaka & Bhela	Diseases	Sushrut & Ashtang Sangraha	Diseases	Ashtang Hrudaya
1	<i>Udakadhara</i>	Dehydration, Wrinkles	<i>Avabhasini</i>	<i>Sidhma, Padmakantak</i>	<i>Prathama</i>
2	<i>Asrugdhara</i>	<i>Tilakalaka, Nyancha, Vyanga</i>	<i>Lohita</i>	<i>Tilakalaka, Nyacha, Vyanga</i>	<i>Asrugdhara</i>
3	<i>Thrutiya</i>	<i>Sidhma, Kilasa kustha</i>	<i>Sweta</i>	<i>Charmadala, Ajagallika, Mashaka</i>	<i>Thrutiya</i>
4	<i>Chaturti</i>	<i>Dadru, Kustha</i>	<i>Tamra</i>	<i>Kustha, Visarpa</i>	<i>Chaturti</i>
5.	<i>Panchami</i>	<i>Ajaji, Vidhradi</i>	<i>Vedini</i>	<i>Kushtha, Kilasa</i>	<i>Panchami</i>
6.	<i>Shasti</i>	<i>krishna-rakta varna Arunshika</i>	<i>Rohini</i>	<i>Granthi, Apachi, Arbuda, Shlipada, Galaganda</i>	<i>Shasti</i>
7.			<i>Mamsadhara</i>	<i>Bhagandara, Vidhradi, Arsha</i>	

Skin layers told by Sharangadhara and Bhavaprakash are the same as that of Sushruta except for 7<sup>th</sup> one i.e. *Sthula*

### **Tvak Karya**

- 1) *Aavarana*<sup>[13]</sup> -*Tvacha* covers and protects the whole body from various external microbes.
- 2) *Lepana* -*Tvacha* is *Mamsa Upadhatu*, so it does *Lepan Karma*.<sup>[14]</sup>
- 3) *Sparshagyan* – *Sparsha Indriya Adhistana* deals with touch, temperature and pressure<sup>[15]</sup>.
- 4) *Prakashan* - Site of *Bhrajaka Pitta* gives lustre to the complexion of the individual.<sup>[16]</sup>
- 5) *Pachan*- *Tvacha* is a site for *Bhrajak Pitta*, it digests absorbed *Dravya* which is applied to the skin.
- 6) *Dharana*- *Tvacha* performs its *Dharana* function by holding water capacity in it.
- 7) *Mala Nirharan* - *Swedavaha Strotasa* excretes *Sweda* and *Mala* through *Tvacha*.
- 8) *Ushma Niyantrana*- By perspiration mechanism regulates the temperature of the body.

### **Doshas associated with Tvacha-**

*Vata Dosh*- “*Indriyachittadrik*” -*Prana Vayu* perceives Touch impulses through *Tvacha* transfers to *Manas* and *Buddhi*.<sup>[18]</sup> Responding to that *Mana* generates movements with *Krutsna Dehachari Vyana Vayu*.<sup>[19]</sup> *Varna* (complexion) of the skin is maintained by *Uadana Vayu*.<sup>[20]</sup> *Rasa Dhatu* produced by digestion of the *Ahara* by *Saman Vayu* nourishes *Tvacha*. Because of weak *Saman Vayu*, skin becomes dry and rough. *Apana Vayu* is responsible for *Mala-Mutra Visarjana* and excretion of excessive *Kleda* from the body. *Apana Vayu Karmat Kshaya* hinders *Sweda* to hold *Kleda* shows the distorted result on *Tvacha*.

*Pitta dosha*- *Varna* and *Prabha* of *Tvacha* are specified on the skin by *Bhrajak Pitta*. *Bhrajak Pitta* digests *Aoushadhi* of *Abhyang*, *Lepa* and *Seka* applied on *Tvacha*. It keeps the skin healthy and lubricant by regulating the functions of the sebaceous gland and sweat gland.<sup>[21]</sup>

*Kapha Dosh*- *Drava* and *Snigdha* properties of *Kapha* brings *Mardavata* of skin.

*Dhatu associated with Tvacha*- *Dhatu* influences soundness of *Tvacha* as most of the *Rasa Sarata*

characteristics like *Snigdha*, *Mruduta*, *Slakshnata* and *Sukshmatata* of *Tvacha* are related to *Tvacha*.<sup>[22]</sup>

*Rasa Dhatu*- *Rasa Dhatu* nourishes *Tvacha*. *Rasa Sarata* is understood as *Tvak sarata* as *Snigdha*, *Mruduta*, *Slakshnata* are related to *Tvacha*.<sup>[22]</sup> *Rasa Vyapar* influences the soundness of *Tvacha*. Any dosha vitiates *Rasa Dhatu* leads to vitiation of *Tvak*. *Charaka* mentions *Rasagata Vata* as *Tvakgat Vata* with symptoms *Ruksha*, *Sphutita*, *Supta* and *Krishna Tvacha*.<sup>[23]</sup> *Rakta Dhatu*- *Tvacha* *Varna* depends on status *Rakta Dhatu*. *Tvacha* of *Rakta sara* individual remains reddish and dazzling.<sup>[24]</sup> *Raktagata Vata* symptoms are *Twak Vaivarnya*, *Arunshi*, *Raga*, *Sparsha Nasha*.<sup>[25]</sup> *Mamsa Dhatu*- *Tvacha* is *Upadhatu* of *Mamsa Dhatu*. *Meda Dhatu*- *Meda Dhatu Mala* -*Sweda*<sup>[26]</sup> is excreted out of the body through *Tvacha*.

*Asthi Dhatu*- *Nakha*, *Roma* and *Kesha*, these *Malas* of *Asthi Dhatu* are revealed out through *Tvacha*.<sup>[27]</sup>

*Majja Dhatu*- *Tvak-Sneha* is included in the *Malas* of *Majja*.<sup>[28]</sup>

*Shukra Dhatu*- *Shukra Dhatu* is distributed throughout the *Sharira*. Hence, it is also present in *Tvacha*.

### **Tvacha and Mala-**

*Sweda* expels waste products out of the body, maintains moisture temperature and smoothness of *Tvacha*. *Dhatu Malas* like *Nakha* and *Kesha* are expressed out through *Tvacha*. *Majja Mala* also contributes to keeping skin smooth and unctuous.

### **Tvacha and Srotas-**

*Tvacha* - *Mool* of *Mamsavaha Srotas*,<sup>[29]</sup> has a connection with *Rasavaha Srotas* (nourished by *Rasa dhatu*) and with *Swedavaha Srotas*. (*Sweda* expels through it) *Tvak* and *Agni*-

Disturbance in *Rasa Sanvahana* and *Rasa Dhatwagni Vyapar* leads to abnormal changes over *Tvak*. The normal status of *Agni* of a person reflects lustre- colour and complexity of the skin.<sup>[30]</sup>

### **Vyadhikshamatva (Immunity)-**

The capacity to resist disease manifestation and arrest the pathology is understood as *Vyadhikshamatva*. According to *Charaka Vyadhikshamatva* differs in each individual due to different nutritional status, *Ojas*, *Bala*. It may also be further pointed out that the constitutional status or *Prakruti* also differs from

individual to individual and therefore the *Vyadhikshamatva*. The natural inherent strength of the body responsible for health is *Bala*. It depends upon *Dhatu sarata, Prakruti, Desha, Kala* and *Ojas*. Among *Sahaja, Kalaja* and *Yukti Kruta Bala*,<sup>[31]</sup> *Vyadhi kshamatva* of *Twacha* can be increased by empowering *Yuktikruta Bala*. This can be achieved by administering a proper diet considering *Dashavidha bhava, Shodhan* and *Shaman chikitsa*. In modern science, immunity is of two types a) Innate immunity - inborn capacity of the body to resist the pathogens b) acquired immunity -resistance developed in the body against any specific foreign body. Skin is an integral part of the immune system as it protects the body in various ways. Keratin protects the underlying tissues from microbes, abrasion, heat and chemicals. Tightly interlocked keratinocytes resist invasion by microbes. Lipids released by lamellar granules inhibit evaporation of water from the skin surface, guard against dehydration. They retard the entry of water across the skin surface during showers and swims. The oily sebum of the sebaceous gland keeps skin and hair from drying out. It also contains bactericidal chemicals. The acidic pH of perspiration retards the growth of microbes. The pigment melanin helps shield against the damaging effect of UV light. Two types of cells are responsible for immunological protective functions. Intraepidermal macrophages alert the immune system to the presence of potentially harmful microbial invaders by recognizing and processing them. The macrophages in the dermis phagocytize bacteria and viruses that manage to bypass the intraepidermal macrophages of the epidermal.<sup>[32]</sup>

## DISCUSSION

Skin being external covering and most exposed organ to environmental pollution is prone to infection. The equilibrium state of the *Dosh, Dhatu, Mala, Srotas, Agni* is responsible for the *Bala* of the skin. Skin immunity can be achieved by improving *Rasagni Vardhan* and *Tvakgata Dhatuvyapar*. Skin synthesis vitamin D in the early morning sunlight. Cells in the stratum basale are constantly proliferating to produce new cells that will comprise the upper epidermal

layers. Once a keratinocyte leaves the stratum basale, it begins the process of differentiation (specialization of cells for specific functions) known as keratinization. Thus, new cells from the stratum basale replace the outer layer of skin cells that is shed over time. Along with various coregulators, vitamin D regulates the proliferation and differentiation processes that replenish skin. In addition to its steroid hormone actions, vitamin D regulates biochemical steps that result in a cellular influx of calcium, which is important in cell differentiation. The processes of epidermal proliferation and differentiation are essential for normal cell growth, wound healing, and maintaining the barrier function of the skin. Because the uncontrolled proliferation of cells with certain mutations may lead to cancer, vitamin D may protect against certain cancers.<sup>[33]</sup> During Ayurvedic modalities like *Abhyanga, Swedan, Lepa, Parishek, Drugs* stimulate *Bhrajak Pitta*. Subcutaneous absorption widely occurs through the skin surface and partially through hair follicles, sweat glands and sebaceous glands. While the medicament is rubbed over skin vigorously, penetration across hair follicles and glands increase simultaneously. Rubbing (*Mardan*) forces some material through the stratum corneum without molecular dispersion and diffusion through the barrier. Arunadutta Hridaya has described the *Bhrajaka Pitta* and its functions like *Deepana* and *Pachana*.<sup>[34]</sup> By *Abhyanga, Lepa, Parisheka* hardness and roughness of skin is reduced. Thus, in total *Twak sarata* gets improved.

The Panchakarma procedures like *Vaman, Virechan, Raktamokshana* helps to maintain the healthiness of skin by removing the vitiated dosha and maintaining the equilibrium state of *Dosha, Dhatu, Mala* etc.

*Rasayana* is an Ayurvedic rejuvenation therapy that helps in the maintenance and promotion of health. *Rasayana* essentially means nutrition at all levels from macro to micro-cellular level. *Rasayana* brings about the normalcy of *Rasadhatu* and thereby maintain other *Dhatu*s in equilibrium for a longer period. As Skin is more related to *Rasa Dhatu* *Rasayana* therapy helps to boost the immunity of the skin. Our *Acharys* mentioned *Rasayana* like *Amalaki, Lauha Bhasma* for the lustre/ complexion of the skin, *Bakuchi, Tugaraka,*

*Khadira, Bringaraj, Priyal, Jyotismati Rasayan* in skin disease.

## CONCLUSION

Based on the literature review and discussion we can conclude that the health of the skin is dependent on both external (environmental) factors and internal (bodily) factors. External factors like good and proper exposure of skin to sunlight. The equilibrium state of internal factors like *Dosha, Dhātu, Mala, Agni and Srotas*. Panchakarma procedures and *Rasayan* therapy help to boost skin immunity and give good and healthy skin as well as life to an individual.

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