

Comparative literature study of *Twak* (Skin) according to Ayurveda and Western medicine

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Abstract

Since, the incidence and impact of diseases of skin are ever increasing; the necessity of proper multifaceted understanding about skin is immense. Furthermore, the knowledge elaborated in Ayurveda and western medicine, if compared in a nutshell, will benefit clinicians vastly. Thus, my objective was to abridge the key facts about *Twak* (Human Skin) as per both disciplines and for this all relevant literary materials were referred with emphasis to authentic Ayurveda Samhita (Compendiums). Following are some of the notable particulars brought in-to light by this research. Disease conditions of *Twak* cause physical, mental, social and spiritual disharmonies in a person. Hence, *Twak* is like a reflector of the total health and wellbeing of an individual and his personality. Thus, treatments of *Twak* are of paramount importance. The seven layers of *Twak* proclaimed by Sushruta Samhita, corresponds perfectly with the seven skin layers, accepted by western medicine at present. Sushruta Samhita states that, there is no other worrying disease like *Kushtha* (Skin Disease) highlighting the suffering of such patient. It is declared by *Maharishi* (Great Sage) Dhanvantari that, disease *Shvitra* (Vitiligo) occurs precisely in the fourth layer of *Twak*; *Tamra*, which can be accepted even according to modern medicine, since the Melanin pigment is made by copper containing enzyme (Tyrosinase). In conclusion, despite daily advancements and changes in knowledge of western medicine and modern science, the excellence of wisdom proclaimed thousands of years ago by the holy and divine Maharishi of Ayurveda, will stand resolute and unparalleled even in future.

Keywords: *Twak*, Ayurveda, Western Medicine

Introduction

Twak, the human skin is the outermost covering of the body and also the largest sensory organ of man. Skin is the physical barrier which controls the exchange of materials between the body and the environment. Skin is also mainly responsible for the external appearance of a person and thus, health or disease of skin affects one's personality immensely. This fact is evident by the poor social involvement seen in majority of the patients suffering from *Kushtha* such as; *Shvitra*, *Kitibha* (Psoriasis), etc. Today the incidence of skin diseases is ever increasing due to various reasons. Therefore, at present there is a massive necessity for the knowledge about skin to be collected, analyzed and summarized as per the view of both Ayurveda and western medicine in order to enhance the health and to minimize the diseases of skin.

In Ayurveda, the ancient science of life, the concept of *Twak* is mainly elaborated under *Sharera rachana* (Anatomy) and an unparalleled as well as fascinating knowledge is found specially in *Vruddatraya* regarding human skin. The words *Twak*, *Twacha* and *Charma* are synonymous to each other and appear frequently in Ayurveda Samhita to symbolize human skin. *Twacha* is derived from "*Twach samvarne*" *Dhatu* meaning the covering of the body¹. In Ayurveda extensive description of *Twak* is available, including mainly the *Rachana shareera* (Anatomy), *Kriya sharera* (Physiology), *Vikritivingnana* (Pathology) and *Chikitsa* (Clinical Medicine) of *Twak*.

In Ayurveda the three main pillars are the *Trisutra*, namely; *Hetu* (Aetiology), *Linga* (Symptomatology) and *Aushadha* (Treatments), whilst the two main objectives are preserving health of the healthy person and pacifying ailments of the diseased person².

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When the *Twak* is concerned, it is seat of causative factors, symptoms and also of treatment in both health and disease. Therefore, *Twak* can be considered as an important concept elaborated in Ayurveda, from the very fact that the Ayurveda fundamentals itself are applicable and contained in the entity, *Twak*.

Even according to western medicine, skin can be considered as an important organ of the human body and not only that but also, skin is regarded as the largest organ of the integumentary system. In accordance with the Churchill Livingstone Elsevier medical dictionary approved by the Royal Society of Medicine, "Skin is the tissue which forms the outer covering of the body and consists of two layers; the outer Epidermis (Cuticle), Dermis (True Skin) and the appendages; nails, hair follicles, sebaceous glands and sweat glands. The skin is concerned with a number of functions including; sensation, protection, thermoregulation, excretion, absorption, storage, synthesis and communication"³. Similar to Ayurveda, also in western medicine, the skin is elaborated in its anatomy, physiology, pathology and relevant clinical medicine.

In an era where most people only believe what is acknowledged by modern science, it is truly astonishing how the ancient divine *Rishi* (Sages) have proclaimed many current or recently accepted facts of western medicine, thousands of years ago. Furthermore, the wisdom available in our ancient Ayurveda Samhita will never change and will be valid even in the future, despite changes and advancements of modern science each day.

Materials and Methods

This review was conducted using Ayurveda and modern medical books, journals and periodicals.

Definition

The definition and etymology of the word *Twak* means, covering of the human body and even after so many years, western medicine also defines skin in the same way as "Skin is the tissue which forms the outer covering of the body"⁴.

Tridosha

The *Twak* is considered as *Vishesha vatasthana* (Specific Seat of *Vata*) and *Vata dosha* is correlated with the modern nervous system. Thus, this consideration of *Twak* as *Vishesha vatasthana* is to be accepted due to the presence of millions of nerve

endings belonging to different types, in the skin⁵. Similarly, the presence of *Bhrajaka pitta* or *Agni* in *Twak* is evident due to the phenomenon of transdermal absorption, which was accepted recently by the western medical science⁶.

Prakriti (Body constitution)

Though western medicine states a fivefold classification of skin types, a far better sevenfold classification was mentioned many years ago, in the Ayurveda Samhita according to *Deha prakriti* as; *Vatika*, *Paittika*, *Shleshmika*, three *Dwandaja* and *Thridoshaja*.

Saptadhatu

The composition of skin as blood, muscle, lymph and fat, were already explained in the ancient Ayurveda Samhita in relation to *Saptadhatu* as, *Twak* being composed of *Rasa*, *Rakta*, *Mamsa* and *Medas dhatu* primarily.

Trimala

The effect of imbalance of *Sweda* (Sweat, one among *Trimala*) on health of skin was explained in Ayurveda, far before it was accepted by the western medicine.

Vyadhikshamatva (Immunity)

The modern concept that good immunity leads to lack of skin diseases, was already explained in the ancient Ayurveda Samhita as *Vyadhikshamatva* and *Sara*, with a difference of nomenclature only⁷. Specially *Twak sara* is responsible for good health of the skin.

Srotas (Body channels)

The modern explanation that skin consists of sweat ducts and micro-channels, were already mentioned in the Ayurveda compendiums as *Srotas* and *Sukshma srotas*.

Agni (Digestive fire)

The presence of *Bhrajaka agni* in *Twak* is accepted even in light of knowledge of western medicine since, what is applied or sprayed on the skin is metabolized and absorbed by the skin itself (Transdermal Absorption)⁸.

Ama

Local *Ama* on *Twak* and its disease causing nature can be established according to the fact that, too much applications on skin that are not removed in time will lead to skin diseases, which is explained even in western medicine. This is due to blockage of sweating and the creation of a favorable environment for micro organisms, which in fact are actions attributable to *Ama*.

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Embryonic Formation of Twak

Vruddatraya (Sushruta Samhita, Charaka Samhita and Ashtangahrdaya Samhita) consider the third or sixth month of intrauterine life as time period of embryonic Formation of *Twak*, which corresponds with the modern view of western medicine^{9,10,11}.

Varna (Skin complexion)

The elaboration of factors affecting *Twak varna* is far advanced in Ayurveda than western medicine. In Ayurveda the *Varna* of *Twak* is stated according to the dominance of the *Panchamahabhuta* (Five Great Elements) and not only that but also many antenatal and postnatal factors which contribute to the skin color are described.

Chaya and Prabha

Chaya and *Prabha* are concepts of Ayurveda which are far advanced than that of western medicine^{12,13}. *Chaya* and *Prabha* can be translated to terms Luster and Aura respectively. Concepts like *Prabha* are rarely mentioned in modern science.

Indriya (Sense organs)

According to the *Panchapanchaka*, *Twak* is the seat of *Sparshanendriya* (Tactile Sensory Organ) and *Sparshaja buddhi* is located in *Brahma hradaya* (Brain). These concepts also correspond with the view of western medicine due to presence of various tactile receptors in the skin and the fact that sensory nerve impulses send from them are interpreted in the brain.

Manas (Mind) and Atma (Soul)

The concepts relating *Manas* and *Atma* with *Twak* are far advanced than that of modern western medicine and involve metaphysical and parapsychological entities, which are currently being established with the help of techniques such as hypnotism and Kirlian photography.

Marma (Vital points)

The description of *Marma* in Ayurveda is far advanced than that of western medicine. Ayurveda explains a total of hundred and seven *Marma*, with a detailed description of each and there are many *Marma* that are closely related to the skin.

Twak layers

The descriptions of layers of *Twak* according to *Vruddatraya* by holy and divine *Rishi* are unparalleled. Specially the description of *Twak* layers available in Sushruta Samhita (Table 01), including the thickness and associated diseases of each layer is fascinating even for modern western clinicians¹⁴.

Twak functions

The description of functions of *Twak* according to Ayurveda is far more elaborate and has a broad spectrum, compared to the same of western medicine. There are also some general common functions including protection, excretion, absorption, thermoregulation and immunity. Some of the most notable, normal functions of *Twak*, according to Ayurveda are summarized below.

Twak is the external covering of the *Shadanga sharira* and thus it protects the body from mechanical wear and tear. *Bhrajaka pitta* or *Bhrajaka agni*, seated in *Twak* (specifically the *Avabhasini* layer) metabolizes and absorbs what we apply on skin in the form of *Abhyanga*, *Parisheka*, *Avagaha*, *Lepana*, etc and is therefore, responsible for the mechanism known as dermal absorption. *Bhrajaka pitta* is also responsible for normal *Varna* of *Twak*, exhibition of five types of *Chaya* (Luster) and *Prabha* (Aura) of a person. *Twak* performs excretory functions of body via process of expulsion of *Sweda*, this helps in thermal regulation of body and also removes excess *Medas dhatu*, since *Sweda* is *Dhatumala* of it. At last but not least, the *Twak* holds or supports *Prana*, as suggested by the name *Pranadhara* given to the last layer of *Twak* by Acharya Vagbhata in Ashtanga Samgraha.

Rogamarga

Twak was considered as a *Rogamarga* or a route of entry of diseases in to the body by Ayurveda, thousands of years before the same being accepted by western medicine¹⁶. This route causes local skin diseases as well as generalized diseases of body.

Table 1: Layers of *Twak* according to Sushruta Samhita¹⁵

Name of Layer	Functional Importance	Thickness (Fraction of <i>Vrihi</i> rice)	Associated Diseases
1. <i>Avabhasini</i>	Layer which is reflector of all <i>Varna</i> and also exhibits five types of <i>Chaya</i> of <i>Twak</i>	1/18	<i>Sidhma</i> , <i>Padmakantaka</i> , etc
2. <i>Lohita</i>	Layer with reddish color	1/16	<i>Tilakalaka</i> , <i>Nyaccha</i> , <i>Vyanga</i> , etc
3. <i>Shweta</i>	Layer with whitish color (transparent)	1/12	<i>Ajagallika</i> , <i>Charmadala</i> , <i>Mashaka</i> , etc
4. <i>Tamra</i>	Layer with copper color	1/8	<i>Kilasa</i> , <i>Kushtha</i> , etc
5. <i>Vedini</i>	Layer responding to sensation (touch)	1/5	<i>Kushtha</i> , <i>Visarpa</i> , etc
6. <i>Rohini</i>	Layer helpful for wound healing (regeneration of <i>Twak</i>)	1	<i>Granthi</i> , <i>Apachi</i> , <i>Arbuda</i> , <i>Shlipada</i> , <i>Galaganda</i> , etc
7. <i>Mamsadhara</i>	Layer which provide support to muscles	2	<i>Bhagandara</i> , <i>Vidradhi</i> , <i>Arshas</i> , etc

***Twak vikara* (Diseases of skin)**

The descriptions of *Twak vikara* available in Ayurveda classics are far detailed and complete than those of western medicine, many skin diseases are of unknown etiology according to western medicine. *Shvitra* (Vitiligo) is classified as an accessory *Kushtha* or skin disease, surprisingly by both Ayurveda and western medicine.

Sushruta Samhita states in the fifth chapter of *Nidanasthana* named, *Kushtha nidana* that, there is no other worrying disease like *Kushtha* emphasizing the suffering of a patient with *Twak vikara*. Not only that but also, again in the same chapter of Sushruta Samhita, it is stated that if a person dies of a *Kushtha* disease he might be reborn with the same *Kushtha*, this is due to the *Papa karma* (Bad Deeds) associated with *Jeeva atma* (Individual Soul). Modern scientists are still gathering facts about such complex concepts understood by the divine knowledge of our great *Rishi*.

***Twak vikara chikitsa* (Treatments of skin diseases)**

Disease conditions of *Twak* cause physical, mental, social and spiritual imbalances in a person, therefore treatments of *Twak* are of great importance. The *Chikitsa* available in Ayurveda classics are also unparalleled.

Specially Ayurveda medicine can completely cure many chronic skin diseases using either general *Kayachikitsa* or *Shalya chikitsa* procedures. Proper Knowledge of *Twak* can be considered as a gateway to performing *Shalya karma* because during any invasive surgery, first the integrity of *Twak* should be breached at a place of minimum deformity and least harm to the patient. Almost all of the External *Chikitsa karma* including *Sneha* (Oleation) and *Sweda* (Sudation) act via interacting with the *Twak* therefore, the state of the skin governs the effectiveness of such procedures.

Results

Many comparisons for layers of skin according to Ayurveda and western medicine are available, but the following table (Table 2) summarizes the most accepted comparison, with respect to view of Sushruta Samhita. This comparison was stated in the commentary on Sushruta Samhita by Dr. Bhaskar Govind Ghanekar.

The Malpighian layer includes both Stratum Spinosum and Stratum Basale. If the Hypodermis be neglected as it is not a part of skin proper, the same comparison is applicable to the six layers of *Twak* proclaimed by Charaka Samhita¹⁸.

According to Sushruta Samhita, *Tamra* the fourth *Twak* layer contain copper colored pigments as suggested by its name, which is true even in light of knowledge of modern western medicine, since the melanin pigment which gives the skin its characteristic color is made by a copper containing enzyme named tyrosinase.

Tyrosinase is a rate limiting enzyme controlling the production of melanin and is found in abundance in the skin melanocytes. Melanocytes are primarily found in the Stratum Basale of Malpighian Layer. This is but another example for the unparalleled and fascinating

level of wisdom of our holy and divine *Rishi*, whose words will remain unchallenged even in future.

Twak holds or supports Prana, as suggested by the name *Pranadhara* given to the last layer of *Twak* by Acharya Vagbhata in Ashtanga Samgraha. This phenomenon is further established by the high mortality rate seen in patients with deep and extensive skin burns. Therefore, a hypothesis can be built up as *Twak* holds Prana or life of a person. This theory is also supported by the presence of many *Marma* or vital points in close relation to *Twak*.

As evident by the table (Table 3) of summary of *Twak* layers, many Ayurveda treatises have generally followed the nomenclature of *Twak* layers introduced by Sushruta Samhita.

Table 2: Comparison of Twak Layers of Sushruta Samhita with that of Modern Western Medicine¹⁷

Number of Layer	According to Sushruta Samhita	According to Modern Western Medicine	
		Sub Layer	Main Layer
1.	<i>Avabhasini</i>	Stratum Corneum	Epidermis
2.	<i>Lohita</i>	Stratum Lucidum	Epidermis
3.	<i>Shweta</i>	Stratum Granulosum	Epidermis
4.	<i>Tamra</i>	Malpighian Layer	Epidermis
5.	<i>Vedini</i>	Papillary Layer	Dermis
6.	<i>Rohini</i>	Reticular Layer	Dermis
7.	<i>Mamsadhara</i>	Subcutaneous Layer or Tissue	Hypodermis

Table 3: Summary of layers of Twak according to different Ayurveda Samhita¹⁹

Sushruta Samhita	Charaka Samhita	Ashtanga Hridaya Samhita	Ashtanga Samgraha	Sharanga-dhara Samhita	Bhava prakasha	Bhela Samhita
1. <i>Avabhasini</i>	<i>Udakadhara</i>	<i>Avabhasini</i>	<i>Udakadhara</i>	<i>Avabhasini</i>	<i>Avabhasini</i>	<i>Udakadhara</i>
2. <i>Lohita</i>	<i>Asrukdhara</i>	<i>Lohita</i>	<i>Asrukdhara</i>	<i>Lohita</i>	<i>Lohita</i>	<i>Asrukdhara</i>
3. <i>Shweta</i>	<i>Trutiya</i>	<i>Shweta</i>	<i>Trutiya</i>	<i>Shweta</i>	<i>Shweta</i>	<i>Trutiya</i>
4. <i>Tamra</i>	<i>Chathurthi</i>	<i>Tamra</i>	<i>Chathurthi</i>	<i>Tamra</i>	<i>Tamra</i>	<i>Chathurthi</i>
5. <i>Vedini</i>	<i>Panchami</i>	<i>Vedini</i>	<i>Panchami</i>	<i>Vedini</i>	<i>Vedini</i>	<i>Panchami</i>
6. <i>Rohini</i>	<i>Shashthi</i>	<i>Rohini</i>	<i>Pranadhara</i>	<i>Rohini</i>	<i>Rohini</i>	<i>Shashthi</i>
7. <i>Mamsa-dhara</i>	-	<i>Mamsadhara</i>	-	<i>Sthula</i>	<i>Sthula</i>	<i>Sthula</i>

Table 4: Comparison of *Vikara* of *Twak* and its Appendages, with Equivalent Disease according to Western Medicine^{20,21}

Disease condition according to Ayurveda	Equivalent disease condition according to western medicine
1. <i>Sidhma</i>	Pityriasis Vesicular
2. <i>Padmakantaka</i>	Papilloma
3. <i>Tilakalaka</i>	Non-elevated Mole
4. <i>Nyaccha</i>	Naevi
5. <i>Vyanga</i>	Freckle
6. <i>Mashaka</i>	Raised Mole
7. <i>Visarpa</i>	Erysipelas
8. <i>Kilasa</i>	Vitiligo
9. <i>Granthi</i>	Sebaceous Cyst
10. <i>Arbuda</i>	Tumor
11. <i>Gandamala/Apachi</i>	Cervical Lymphadenitis
12. <i>Shlipada</i>	Filariasis
13. <i>Vidradhi</i>	Abscess
14. <i>Visphota</i>	Blisters
15. <i>Chippa</i>	Whitlow
16. <i>Kunakha</i>	Paronychia
17. <i>Kitibha</i>	Psoriasis
18. <i>Yuvanapidaka</i>	Acne Vulgaris

The above mentioned table (Table 4) includes some disease conditions of *Twak* and its appendages, with the equivalent disease condition according to western medicine. According to the Sushruta Samhita *Granthi*, *Arbuda*, *Apachi* and *Shlipada* are said to occur associating the *Rohini* layer of *Twak*, which can be accepted even in light of knowledge of western medicine because the dermis is the skin layer which contain blood and lymph vessels.

Discussion

In Ayurveda, *Twak* is also described with a holistic approach and all aspects relevant to *Twak* are elaborated magnificently. Though many correlations can be made between the two views, an entity described in Ayurveda cannot be equaled to that of western medicine. In an era where many people only believe what is accepted by the modern science, it is truly fascinating how the ancient divine *Rishi* (Sages) have proclaimed many current or recently accepted facts of western medicine, thousands of years ago particularly those pertaining to *Twak*. This divine science of life, Ayurveda is the ultimate guide for maintenance of health and cure of diseases, which thereby enables a person to achieve the *Chathurvedha purusha artha*; *Dharma*, *Artha*, *Kama* and *Moksha*.

In conclusion, despite daily advancements and changes in the knowledge of western medicine and modern science, the excellence of wisdom proclaimed thousands of years ago by the holy and divine Maharishi of Ayurveda, will stand resolute, unparalleled and supreme even in future.

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