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A REVIEW ON DNYANENDRIYA (SENSE ORGANS) W.S.R. SPARSHANENDRIYA IN KRIYA SHARIR

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ABSTRACT

According to Ayurveda classic texts Indriyas (Sense organ) are the apparatus to attain knowledge for Atma. These are the tools for obtaining knowledge. Acharya Charaka described Indriya as basic instrument in differentiating the living and non-living matters. Whereas in contemporary science Indriyas are dealt only with structure i.e., sense organ where the actual conduction process takes place. Indriyas are composed of five elements still specific Mahabhuta dominates precise Indriya. This is the reason behind reception of specific sensation by its respective Indriya. E.g. Vayu Mahabhuta dominates sparshanendriya and receive knowledge of sparsha. Considering the above said, present paper focuses upon understanding of Dnyanendriya w.s.r. sparshanendriya. Adhisthana of sparshanendriya is tvacha (skin) inside Sharir where dominance of vayu Mahabhuta is there and is responsible for acquisition of special attribute- sparsha (touch). Regarding examination of Indriya the Dnyanendriya is examined for its functional status as the status of perfection in perception of knowledge of respective object. Our study reveals that concept of Acharyas in relation to Dnyanendriya as important tool to gain specific knowledge seems true even in present era. It can be opined that Ayurveda concept related to Indriya needs to be explored through research to provide evidence based information related to Indriya Sharir.

KEYWORDS: Dnyanendriya, Sense organs, Sparshanendriya, Skin.

INTRODUCTION

According to Ayurveda Indriyas (sense organ) are the apparatus to attain knowledge for Atma. These are the tools for obtaining knowledge. In other words we can say that

knowledge (sensory or motor) which is perceived, analyzed, given or received by Atma and the tool which is helpful in reception of the same is termed as Indriya.[1] Further more control over the Indriya is the principle to be followed and practiced for achieving spiritual health. According to Shabdakalpadruma Indriya is defined as Atma or Ishwar (Creator). The cognition and other activities are performed by the Indriyas only where Atma is considered as Indra. Thus the revelation of cognition and activities are due to Dnyanendriyas and Karmendriyas respectively; hence termed as Indriya.[2]

Acharya Charaka described Indriya as basic instrument in differentiating the living and non-living matters.[3] Whereas in contemporary science Indriyas are dealt only with structure i.e. sense organ where the actual transduction process takes place. According to Ayurveda there are total eleven type of Indriyas are present in Sharir i.e. Dnyanendriya (i.e. Chakshu, Srotra etc.), Karmendriya (Vaak, Upastha etc.) and Ubhayendriya (Mana).[4]

Ancient Indian scholars had diverse opinion on the derivation of Indriya. Ayurveda considered Indriya as Panchabhautika.[5] and on other hand Acharya Sanmkhya (philosopher and sage) opined that Indriyas are formed by Trividha Ahamkara i.e. Satvik, Rajasik and Tamasik Ahamkara.[6] Although Indriyas are composed of five elements still specific Mahabhuta dominates precise Indriya. This is the reason behind reception of specific sensation by respective Indriya, e.g. Vayu Mahabhuta dominates sparshanedrya and receive knowledge of sparsha. Considering the above said, present paper focuses upon understanding of Dyanendrya w.s.r. sparshanendriya.

Twacha is one of the ‘Gyanindriyas’ which is responsible for ‘Sparsha Gyan’ therefore it plays a great role in physical and mental well being of any individual. The Unbroken skin is the nature’s dressing over the body. The word Twacha is derived from "Twak Savarne" Dhatu which means the covering of body. According to Vachaspatyam, covering of the body is called as Twacha.[7] The Entire Shadangas remains covered by the Twacha [8]. Charaka described Twacha as the Matruja Bhava.[9] There are six factors which are responsible for the formation of Garbha. Twacha is formed and nourished by Matruja Bhava.

MATERIALS AND METHODS

It is a literary review to explore the understanding of Dnyanendriya w.s.r. sparshanendriya with help of data collected from classical and contemporary Ayurvedic texts and published research articles.

DISCUSSION

It is essential for Atma to acquire knowledge from the outward objects there must be a well coordination between Indriya, Indriya-Artha and Mana. Atma cannot perceive knowledge without the help of Indriya.

According to Acharya Charaka, Indriyas are the basic component in differentiating the living and non-living being.[10] Acharya Sushruta quoted that Indriya are the specific factors or organs situated in body and act as means for acquiring knowledge of various objects and performing various activities of the body.[11]

Indriya Pancha-Panchaka

The Dnyanendriya present inside Sharir conjoins with the Mana (mind) which is synchronous with Atma and then after knowledge is perceived. Lastly the Buddhi (intellect) aspect of the respective Indriya knowledge is gained. All this learning and intellectual process needs an instrument to gain the stable knowledge of the same which is Indriya. For this instance, Acharya Charaka has mentioned the intellectual aspect depending on the five Dnyanendriya present inside Sharir which is also of five different types. This is termed as Indriya Panchapanchaka. It includes Indriya, Indriya Dravya, Indriya Adhisthana, Indriya Artha and Indriya Buddhi.[12]

Table 1: Indriya Panch-Panchak.

No.	INDRIYA	INDRIYA DRAVYA	INDRIYA ADHISTHANA	INDRIYA ARTHA	INDRIYA BUDDHI
1	Shrotra (Hearing)	Kha (Akasha)	Karna (Ears)	Shabda (Sound)	Shabda Buddhi (Auditory centers in brain)
2	Sparshana (Tactile)	Vaayu	Twak (Skin)	Sparsha (Touch)	Sparsha Buddhi (Centre for tactile sense)
3	Chakshu (Vision)	Jyoti (Teja)	Netra (Eyes)	Roopa (Shape)	Roopa Buddhi (Visual centers in brain)
4	Rasna (Taste)	Apa (Jala)	Jihva (Tongue)	Rasa (Rasa)	Rasa Buddhi (Centre for gustatory sense)
5	Ghrana (Smell)	Bhu (Pruthvi)	Nasika (Nose)	Gandha (Smell)	Gandha Buddhi (Olfactory centre in brain)

Acharya Charaka describes five Dnyanendriya as follows.[13]

1. Shrotrendriya : Responsible for perception of sound,
2. Ghranendriya : Responsible for perception of smell,
3. Rasanendriya : Responsible for perception of Taste,
4. Sparshanendriya : Responsible for perception of touch,

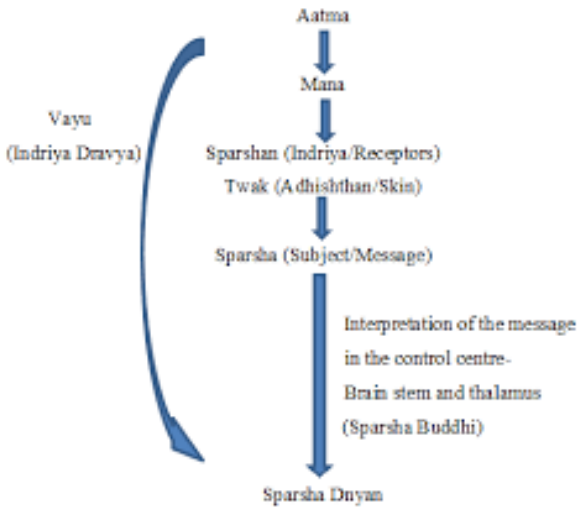
5. Chakshurendriya : Responsible for perception of Vision.

Knowledge and learning process through

Dnyanendriya: There are many various theories present regarding perception of knowledge according to Ayurveda. In short it can be opined that the triad of Indriya – Mana- Atma are solely responsible for perceiving distinct and indistinct type of knowledge.[14-15]

SPARSHANENDRIYA (SENSE ORGAN FOR PERCEPTION OF TOUCH)

Adhisthana of Sparshanendriya is tvacha (skin) inside Sharir which is embedded with dominance of Vayu Mahabhuta and is responsible for acquisition of its special attribute- sparsha (touch). The sparshavahi Dhamanis related to sparshanendriya are responsible to complete their respective work viz. transmission and interpretation of sense of touch; and this is accompanied by Pranavaayu. Further the learning process carries on where the sparshavahi Dhamani Connects Mana which is synchronous with Atma. This is last state where perception of knowledge of sense of touch is felt by Buddhi. It is necessary for normal sense of touch, the respective Indriya (sparshanendriya) and its components must be normal.



Sparshanendriya Kriya Sharir

1. Dosha - Vyan Vayu[16], Bhrajaka Pitta.[17]
2. Dhatu - Rasa dhatu karya (preenan parikshan)[18],
   - Raktadhatu karya (varnaprasadan)[19]
3. Upadhatu - Upadhatu of Mansa dhatu[20],
   - Raktavahi sira,
   - Dhamani- 2 - sparshavahi dhamani (its branches),

4. Mala – Meda dhatu mala - sweda (formation and secretion),
   - Majja dhatu mala (tvakasneha)[21]
5. Strotas - swedavaha strotasa moolasthana,
   - mansavaha strotasa moolsthana[22]
6. Pramana – 20 vrihi
7. Adhisthana – tvacha (skin)[23]
8. Constitutional element - Vayu Mahabhuta[24]
9. Object - sparsha (touch)
10. Sparsha Buddhi

SHARIR RACHANA OF TVACHA

Acharya Charaka has said that Tvacha is Upadhatu of Mamsa dhatu and seat of Sparshendriya.

- **Layers of Tvacha according to different Acharyas**

1. Charaka described six layers of Tvacha. But he named only two, the rest four layers have been described in terms of disease. But he also mentioned as two major layers of Tvaka.[25]
2. Sushruta has described seven layers of skin along with the specific name. He also mentioned the thickness of each layer along with disease involved.[26]
3. Sharangadhar also mentioned seven layers of skin along with the probable onset of diseases. The names of first six layers are same as Sushruta but the seventh layers is named as “Sthula” which is the site of Vidradhi.[27]
4. Vagbhat also classified the Tvaka as seven in Ashtanga Hridaya. Commentator Arundatta and Hemadri have named them according to Sushruta.[28]
5. Bhel- Bhel agree with the description given by Charkacharya about the layers of skin.[29]

Table 2: Layers of Twacha According To Different Acharyas.

Layer	Charaka	Sushruta	Vagbhata	Sharangdhar	Bhela
1	Udakadhara	Avabhasini	Bhasini	Avabhasini	Udakadhara
2	Asrigdhara	Lohita	Lohita	Lohita	Asrikdhara
3	3rd	Sweta	Sweta	Sweta	3rd
4	4th	Tamra	Tamra	Tamra	4th
5	5th	Vedini	Vedini	Vedini	5th
6	6th	Rohini	Rohini	Rohini	6th
7	-	Mamsadhara	Mamsadhara	Mamsadhara	Sthula

Table 3: Probable Correlation of Layers of Twacha And Layers of Skin.

No.	Layers of skin according to Sushruta	Thickness (Vrihi/rice)	Modern layers of skin	Thickness (in mm)
1	Avabhasini	1/18	Stratum corneum	0.05-0.06
2	Lohita	1/16	Stratum lucidum	0.06-0.07
3	Sweta	1/12	Stratum granulosum	0.08-0.09
4	Tamra	1/8	Malpighian layer	0.12-0.15
5	Vedini	1/5	Papillary layer	0.20-0.50
6	Rohini	1	Reticular layer	1-1.1
7	Mamsadhara	2	Sub cutaneous tissue	2-2.1

Table 4: Pathology In Different Layers of Twacha.

No.	Layers of skin according to Sushruta	Thickness (Vrihi/rice)	Pathology (disease)
1	Avabhasini	1/18	Sidhma, Padmakantaka
2	Lohita	1/16	Tilkalak, Nyaccha, Vyanga
3	Sweta	1/12	Charmadala, Ajagallika, Mashaka
4	Tamra	1/8	Kilasa, Kushtha
5	Vedini	1/5	Kushtha, Visarpa
6	Rohini	1	Granthi, Apachi, Arbuda, Slipad, Galaganda
7	Mamsadhara	2	hagandara, Vidradhi, Arsha

KRIYA SHARIR OF TVACHA

Ayurveda defines sharira as shiryate iti shareeram means one which constantly undergoes wear and tear which also applies to skin. Shabdakalpadrum says “twachatisamvrunotimedoshonitakaamiti” i.e., twak covers the underlying rakta, mamsa, medadhatus. Hence one of the important karma of twak is to act as a strong physical barrier against microbial invasion and protect the body against mechanical, thermal, chemical, osmotic and photo damage. Since twacha is upadhatu of mamsadhatu its role is to do dhaaran. The bhrajak pitta which is also termed as bhrajakagni, situated in the twaka assimilates the medication which are applied over the skin in the form of abhyanga, parishek, avagah, alepana etc. vitiation of bhrajak pitta leads to abnormal complexion depicted as chhaya and prabha. Avabhasini layer of tvacha is responsible for varna and chhaya of the body. Udakadhara layer holds up water, and romakoopa facilitates evaporation of sweda. Hence tvacha maintains the temperature regulation and electrolytic balance and also hydration the skin. Sparshendriya being located in tvacha makes tvacha responsible for tactile sensation of hot, cold, touch etc.

ANATOMY OF SKIN

Modern texts have classified the skin into two main parts:

1. The superficial, thinner portion, which is composed of epithelial tissue, is the Epidermis.
2. The deeper, thicker connective tissue portion is the Dermis.

The Epidermis is avascular and the Dermis is vascular, that's why, by cutting the layer of epidermis there is no bleeding, but if we cut the dermis there is bleeding. Deep to dermis, but not part of skin, is the subcutaneous layer, known as the Hypodermis. This layer consists of areolar and adipose tissues.

[1] The Epidermis is further grouped into five layers

1. Stratum Corneum or Horny Layer
2. Stratum Lucidum
3. Stratum Granulosum
4. Stratum Spinosum or Malphigian Layer
5. Stratum Basale or Germinative Layer

[2] The Dermis is further divided into two regions

I. Papillary region

II. Reticular region

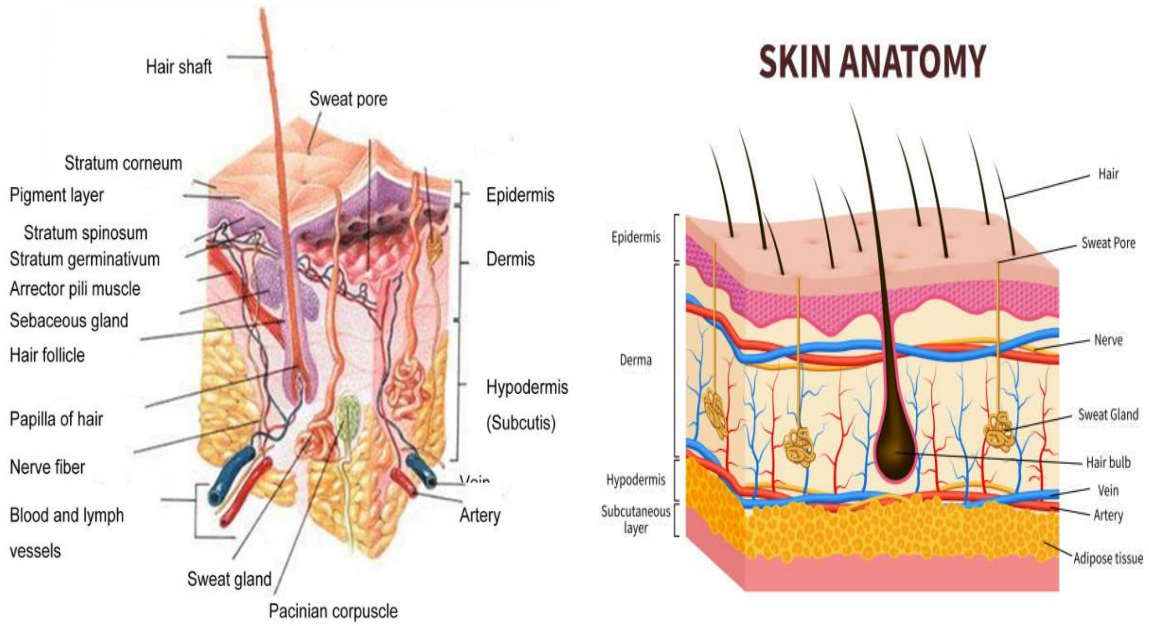


Fig No. 1: Transverse Section of Skin.

PHYSIOLOGY OF SENSE OF TOUCH

FUNCTION OF SKIN

1. **Thermoregulation:** The skin contributes to regulation in two ways: by liberating sweat at its surface and by adjusting the flow of blood in the dermis. In response to high temperature, sweat production from eccrine sweat glands increases; the evaporation of sweat from the surface of skin helps to lower the body temperature.
2. **Blood Reservoir:** The dermis houses an extensive network of blood vessels that carry 8-10% of the total blood flow in a resting adult. For this reason, the skin acts as a blood reservoir.
3. **Protection:** The skin protects the body in various ways. Keratin protects underlying tissues from microbes, abrasion, heat and chemicals. Lipids released from the lamellar granules inhibit evaporation of water from skin surface. The oily sebum from the sebaceous glands keeps hair and skin from drying out and contains bactericidal chemicals
4. **Cutaneous sensations:** These sensations arise in the skin such as touch, pain, pressure, vibration, tickling and thermal sensations like warmness and coolness.
5. **Excretion and absorption:** Despite the waterproof nature stratum corneum, about 400mL of water evaporates through skin daily. Fat soluble vitamins (A,D,E,K), certain drugs and few gases do enter and exit the skin.
6. **Synthesis of Vitamin D:** Synthesis of vitamin D requires activation of precursor molecules in the skin by U.V rays in sunlight. Enzymes in the liver and kidney modify the activated molecule, producing calcitriol, the most active form of Vitamin D.

Applied physiology

In Ayurvedic Literature, skin diseases are described under “Kustha Roga”.

These are of two types-

a) Maha Kustha

b) Kshhudra Kustha

- In Modern Literature, variety of skin disorders have been discussed. Some are:
- Skin lesions and eruptions: Several skin lesions are observed in various dermatological disorders such as: Vesicles, plaques, scales, nodules, papules and patches.
- Color and pigmentation: Following changes in the skin color indicates few systematic conditions:

1. Pallor: Anemia, Hemorrhage and shock.

2. Pale: Hypopitutarism, Hypogonadism.
3. Albinism: Congenital absence of haemosiderin pigment.
4. Cyanosis: Lack of oxygen supply to blood vessels.

CONCLUSION

Understanding concept of Dnyanendriya is an important step in learning of Kriya Sharir. It enables scholars of Ayurveda to learn normal physiology of Indriya (senses) to diagnose any illness related to it. Our study reveals that concept of Acharyas in relation to Dnyanendriya as important tool to gain specific knowledge seems true even in present era. Present study also focused to review regarding sparshanendriya which can also be correlated to sense of touch in contemporary science. Various aspect of Sparshanendriya is explored related to it such as Indriya Arishta, Indriya Pariksha etc. Understanding sparshanendriya helps understand tvacha and disease better which will help in treatment and curing patients. It can be opined that Ayurveda concept related to Indriya needs to be explored through research to provide evidence based information related to Indriya Sharir.

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