A Critical Study of *Tvak Sharir* with special reference to *Dadru*

Lade Vaibhav1*, Chandurkar Nitin2, and Kamble Amar3

1, 2, 3Department of Rachana Sharir, D.Y. Patil College of Ayurved and Research Centre, Pune, MS, India

**Abstract**

*Tvak Sharir* and their diseases have great importance as skin diseases are easily noticeable and a cause of great social concern to the patient. *Tvak* is defined as the organ which covers the external surface of the body. *Ayurvedic* literature has described “*Tvak Sharir*” along with various types of *Kushtha*. There are eighteen types of *Kushtha* described in *Ayurved*, *Dadru* is one of them. *Sushruta* mentioned *Dadru Vyadhi* in *Mahakushthawhile Charakah* has mentioned in *Kshudra Kushtha*. According to pilot study from various *Samhitas* and modern literature it is seen that, the symptoms of *‘Dadru’* and *Dermatophytosis* (Tinea/Ringworm) shows tremendous similarities with each other. The co-relation of *‘Dadru’* and *Dermatophytosis* is done on the basis of similarities of the symptoms and results of histopathological investigation. The result found are *‘Dadru’* and *Dermatophytosis* have almost all the sign and symptoms which are correlated on the basis of literary and clinical study of both *Ayurved* and Modern science. *Dadru*(i.e., ‘AsitetarDadru’) is superficially limited; similarly *Dermatophytosis* is confined to *Stratum Corneum* with some anatomical changes. Skin biopsy shows keratinized stratum corneum having some inflammation. From this examination we conclude that *Dermatophytosis* is superficial fungal infection.

**Keywords**

*Tvak Sharir*, *Dadru*, *Dermatophytosis*
INTRODUCTION

Ayurved is the most ancient system of medicine in the world. Ayurved advocates a complete promotive, preventive and curative system of medicine and it has been practiced since ancient time in the form of eight major clinical specialties. In Ayurvedic science ‘Tvak Sharir’ has an important place.

Tvak is the main seat of VataDosha and it is among the Panchadnyanendriya which has function of sensation. According to Charaka and SushrutaSamhita, the layers of Tvak are six and seven, respectively. Ayurvedic literature has described “Tvak Sharir” along with various types of Kushtha (skin disorders) according to layers of skin.

According to Sushruta, the fourth layer of Tvak is Tamra measuring one-eighth of Vrihi and is the seat of various types of Kilas and Kushtha. The fifth layer is Vedini measuring one-fifth of Vrihi and is seat of Visarpa and Kushtha.

There are eighteen types of Kushtha described in Ayurved. Out of them seven are Mahakushtha and eleven are KshudraKushtha.

Sushruta mentioned DadruVyadhi in Mahakushtha which is characterized by more itching sensation as like pain. In DadruVarnaa of Tvak looks like as Atasi flower or as Tamra, which are spreading in the nature and are associated with Pidaka (pimples).

Charaka described Dadru in fourth layer of Tvak and included under Kshudra-Kushtha. According to CharakaSamhita the clinical description of DadruKushtha is UdagataMandala (raised patch) associated with Kandu (itching), Raga (redness) and Pidaka (pimples).

NEED OF THE STUDY-

In today’s era, people are getting more and more consciousness about healthy skin. Hence to fulfill people’s demand and give them healthy skin, one must study the Anatomy and Physiology of skin and it’s variation from one person to another because every individual have different nature of skin depending upon his Prakruti and many other factors.

Skin conditions can be seen in 10% to 30% of outpatients in any hospital. Skin diseases are easily noticeable, so this is a cause of great social concern to the patient. Very often, skin diseases offer diagnostic clue to many major systemic disorders. There is another reason for doing extensive study of ‘Dadru’ which can be compared to ‘Dermatophytosis’ (Tinea/Ringworm).
according to modern science. *Dadru* is a common worldwide public health problem. *Dadru* causes considerable discomfort. Hence there is a need to find the views of *Ayurved* and modern science for betterment of health of peoples. Efforts are needed to reevaluate the concepts of “*Tvak Sharir*” with special reference to “*Dadru*” Vyadhi. Hence this study is an attempt to clarify the concept of *DadruVyadhi* according to *Ayurved* and modern science.

**AIMS AND OBJECTIVES**

**AIMS:**
1. To study *Tvak Sharir* according to *Ayurved* and Modern science.
2. To study *Samprapti* (pathophysiology) of *DadruVyadhi* according to *Ayurved* and modern science.
3. To study the changes in the skin layer because of *DadruVyadhi* according to *Ayurveda* and modern science.

**OBJECTIVES:**
1. To compile references about *Tvak Sharir* from *AyurvedSamhitas*.
2. To compile references about *Dadru* with respect to *Tvak Sharir* from *AyurvedSamhitas*.
3. To categorize references regarding *Tvak Sharir* and *Dadru*.
4. To obtain observation from clinical assessment of patients taken for study having symptoms of *Dadru*Dermatophytosis.
5. To draw conclusion on basis of clinical study & discussion.

**INCLUSION CRITERIA:**
1) Subject selection has been done irrespective of work, social economic status, age and sex.
2) Subject having sign and symptoms of ‘*Dadru*Vyadhi’.
3) Previously diagnosed cases of *Dadru* have been taken for study.
4) Willing for participating in study.

**EXCLUSION CRITERIA:**
1) Subjects having sign and symptoms of ‘*Dadru* Vyadhi’ but not willing for study will be excluded.
2) Skin conditions other than *Dadru*.
3) Skin conditions with other serious complications and having major systemic diseases like HIV, SLE, and Tuberculosis etc.

**MATERIAL & METHODS**

This study has been done under three sections.
1. Literary Study
2. Clinical Study
3. Histopathological Study

1) LITERARY STUDY

All the information regarding ‘Tvak Sharir’ is collected from Brihattrayi, Laghuttrayi and other classics of Ayurved. Definition of ‘Tvak’, its etymology, genesis and synonyms are compiled from different texts. Compilation of number, names and Vyadhi occurring in various layers of Tvak is done and their comparative study is done. Comparative study of thickness of Tvak told by Sushruta and Dalhana is done. Also relations of Tvak with other factors like Doshas, Dhatus, Malas, Upadhatu, Srotasa, Varna, Prakruti, Sara and Dnyanendriya have been studied.

In case of modern aspect of ‘Tvak’, all the information regarding Anatomy of skin is compiled from different textbooks of Anatomy. Study of embryology of skin, its layers, functions and glands was done. Also study of ‘DadruVyadhi from all the Samhitas was done. The causative factors of ‘Dadru’, its symptoms, DoshaPradhanyaand classification have been studied. Review of previous work done on same topic by scholars has collected through research papers, journals, internet etc. Compilation of information regarding Dermatophytosis (Tinea/Ringworm) was done from the textbooks of Dermatology, clinical medicine, textbooks of pathology etc.

This compilation includes study of causative factors, pathogenesis, symptoms, clinical features and relevant investigations. Finally, the co-relation of ‘Dadru’ and ‘Dermatophytosis’ was done on the basis of symptoms and results of histopathological investigation.

2) CLINICAL STUDY:-

This study was done at various skin clinics under the guidance of Dermatologist. Thirty patients diagnosed with ‘Dermatophytosis’ (Tinea/Ringworm) were examined for the clinical study of the disease. The morphology of ‘Tinea’, its symptoms, areas of predilection was studied. The patients were convinced for the biopsy of skin to rule out whether the stratum corneum alone gets affected in this disease. Photographs of patients were taken to show the morphology of Dermatophytosis infection. Also scrapping of infected parts was done and processed with KOH to rule out the fungii (microorganism).
3) HISTOPATHOLOGICAL STUDIES

It is done in following ways

A. Potassium Hydroxide (KOH) Examination:

Potassium hydroxide dissolves the keratin of keratinocytes, hairs and nails but does not dissolve the fungus. It includes two methods.

1) KOH mounts (without heating)
2) KOH preparation (with heating)

This experiment is done by KOH preparation.

Indications - Infection with fungi or yeast is suspected, e.g. Dermatophytosis (ringworm), tineaversicolor, candidiasis, etc.

Steps Involved

1. Using a no.15 scalpel blade, scraping has taken from the border of lesions, involved nails or infected hair has extracted with forceps.
2. First 1 to 2 drops of 10 to 20 % potassium hydroxide (KOH) is placed on a clear glass slide. Then collected specimen of scales is immersed in drop of KOH. Cover slip is kept on the specimen. KOH mixture is heated by passing the slide through a Bunsen burner flame several times to dissolve the scales which facilitate identification of fungal hyphae. The slide is then examined under the light microscope (10x and 40x).

Interpretation

1. Dermatophytes appear as septate branching hyphae in the scales or hyphae (fig.1) and spores in hair shaft.
2. Malassezia furfur (Pityrosporumovale) the causative agent of tineaversicolor is seen as short stumpy mycelia elements with thick walled rounded spores-(Spaghetti and Meat balls appearance). (fig. 2)
3. Candida is seen as thin filamentous mycelial elements with pseudobudding and spores.

Fig.1                        Fig. 2

b. Skin Biopsy:

Indications:

1. The most important investigation in dermatology is biopsy of the lesion. A lesion may mimic many dermatoses and a definitive diagnosis can only be made on biopsy.( fig.3)
2. Skin biopsy may be used for a variety of investigative procedures such as ultra-structural examination, immuno-
fluorescence studies, enzyme histochemistry and immuno-histo-chemistry, microbiological studies, tissue culture etc.

Fig. 3

**Site of Biopsy:**
The untreated lesions have taken for biopsy which is representative of the skin disorder as whole. Written consent is normally obtained from the patient and local anesthesia with 1% or 2% lignocaine with or without adrenaline is injected around the biopsy site.

**Techniques of Skin Biopsy:**
Elliptical surgical biopsy, punch biopsy, curettage or shave biopsy may be undertaken.

**Punch biopsy is taken for this experiment (fig.4)**
The biopsy punch of at least 5 mm is required to obtain satisfactory specimen. The punch is pushed into the skin with a downward twisting movement and then removed. The tissue specimen is lifted and cut. The wound may be left to heal without suturing. The biopsy specimen is put in 10% formalin solution for histopathological studies. It is properly labeled and sent to pathology department with full clinical details of the case.

Fig. 4

**OBSERVATIONS**
1. There is some controversy regarding number of Twacha. Some Acharya’s have informed six types of Twacha while some have told 7 types.
2. AcharyaCharaka and AcharyaSushruta both have given different Vyadhi in layers of Twacha. e.g. Charaka said ‘Dadru’ has four layers of Twacha and included it under Kshudrakushtha. While Sushruta mentioned that fourth layer i.e., ‘Tamra’ is seat of Kilas and Kushtha. The fifth layer i.e., ‘Vedini’ is seat of Visarpa and Kushtha. Sushruta described ‘Dadru’ under Mahakushtha.
3. Measurement of thickness of Twacha given by Sushruta is near about same which
is quoted in modern textbooks. The measurement of *Dalhan* doesn’t matches with the concepts of modern science.

4. The symptoms of ‘Dadru’ and Dermatophytosis (Tinea/Ringworm) show tremendous similarities with each other (Table 1) . Their similarities, distributions and presentations tubular (Table 1A, 1B,1C) and graphical presentation (graph1,2,3) are as follows:

Table 1 :-

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Dadru</th>
<th>Dermatophytosis(Tinea)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Colour</td>
<td><em>Tvak</em> looks like as <em>Atasi</em> flower or as Tamra. (&lt;table 1A &amp; graph 1&gt;)</td>
<td>Red, copper, gray, black</td>
</tr>
<tr>
<td>3</td>
<td>Areas of Predilection</td>
<td>All over the body (&lt;table 3C &amp; graph 3&gt;)</td>
<td>Skin all over the body, depending upon the site of involvement e.g. face-Tineafaciei.</td>
</tr>
<tr>
<td>4</td>
<td>Location</td>
<td><em>Charaka</em> told ‘Dadru’ in fourth layer of <em>Twacha</em>, of <em>Madhavanidana</em>, Deep rooted i.e. <em>AsitaDadris</em> is included under <em>Mahakushtha</em> whereas superficially occurring <em>Dadri.eAsitetarDadru</em> is included under <em>Kshudrakushtha</em></td>
<td>Superficial fungal infections (confined to stratum corneum) Deep fungal infections (invade deeper tissues)</td>
</tr>
</tbody>
</table>

**Histopathological Study:**

-Histopathological studies were performed by KOH preparation method in which dermatophytes appear as septate branching hyphae in the scales.

1) Mild epidermal changes such as focal intercellular edema and varying amounts of dermal inflammation are seen.

2) The fungal elements are readily seen in sections stained by the periodic acid-Schiff’s (PAS) reagent.

3) Dermatophytes are superimposed on inflammatory lesions of the skin.

Table 1A Varna wise distribution of Dadru

<table>
<thead>
<tr>
<th>Varna</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shweta</td>
<td>02</td>
<td>6.5%</td>
</tr>
<tr>
<td>Tamra</td>
<td>20</td>
<td>66.5%</td>
</tr>
<tr>
<td>Pita</td>
<td>01</td>
<td>3.5%</td>
</tr>
<tr>
<td>Shyava</td>
<td>07</td>
<td>23.5%</td>
</tr>
</tbody>
</table>
Graph 1 Varna of Dadru

Table 2B Lakshanas wise distribution of Dadru

<table>
<thead>
<tr>
<th>Lakshana</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kandu</td>
<td>29</td>
<td>96.5%</td>
</tr>
<tr>
<td>Raja</td>
<td>13</td>
<td>43.5%</td>
</tr>
<tr>
<td>Vedana</td>
<td>02</td>
<td>6.5%</td>
</tr>
<tr>
<td>Daha</td>
<td>10</td>
<td>33.5%</td>
</tr>
<tr>
<td>Pidaka</td>
<td>22</td>
<td>73.5%</td>
</tr>
<tr>
<td>Mandala</td>
<td>23</td>
<td>86.5%</td>
</tr>
</tbody>
</table>

Graph 2 – Lakshanas wise distribution

Table 3C Vyaktisthana (Area of Predilection) wise distributions

<table>
<thead>
<tr>
<th>Area</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beard</td>
<td>03</td>
<td>10%</td>
</tr>
<tr>
<td>Cervical</td>
<td>03</td>
<td>10%</td>
</tr>
<tr>
<td>Axilla</td>
<td>01</td>
<td>3.5%</td>
</tr>
<tr>
<td>Forearm</td>
<td>02</td>
<td>6.5%</td>
</tr>
<tr>
<td>Hand</td>
<td>03</td>
<td>10%</td>
</tr>
<tr>
<td>Finger nail</td>
<td>01</td>
<td>3.5%</td>
</tr>
<tr>
<td>Chest</td>
<td>01</td>
<td>3.5%</td>
</tr>
<tr>
<td>Flank</td>
<td>02</td>
<td>6.5%</td>
</tr>
<tr>
<td>Groin</td>
<td>05</td>
<td>16.5%</td>
</tr>
<tr>
<td>Leg</td>
<td>05</td>
<td>16.5%</td>
</tr>
<tr>
<td>Foot</td>
<td>04</td>
<td>13.5%</td>
</tr>
</tbody>
</table>

Graph 3 Area of Predilection

DISCUSSION

1. Discussion on Review of Tvak Sharir and anatomy of skin:-

According to Ayurveda, Tvak is the organ which covers the external surface of the body. Modern science also defined skin as external covering of the body. Thus from the above statements; we can show that, the Tvak according to Ayurved and skin according to modern science shows resemblance between each other. According to Sushruta, Tvak gets developed in the form of layers on the surface of Garbha, just like cream gets formed on heating milk. Modern
science has also given development of skin in the form of layers. According to Ayurvedic Tvak reflects Varna of an individual, which shows similarity with modern science in the form of melanin pigments present in skin which determines the colour of the individual.

Tvak is one of the Dnyanendriya which is of Vyavayi in nature. Its abode is Sparshnendriya which is responsible for the touch sensation. Alike the above quotation, modern science has also consider, skin as sensory organ, which is also responsible for the touch sensation.

Thickness of Tvak told by Sushruta and Dalhana is having great difference; Sushruta seems to be more accurate in telling thickness of Tvak which is more or less same to the thickness quoted in modern textbooks of Anatomy.

Skin is composed of sweat glands, hairs, nails and numerous openings. Skin is supplied by sebaceous glands which keep the skin surface oily and sweat glands which excrete waste materials of the body through sweat.

Skin is having protective functions, helps in general sensation, in excretion of waste products of metabolism, synthesizes vit-D, and maintains water balance and stores fats, water and salts.

It is divided into two layers outer epidermis and inner dermis. The epidermis starting from above inwards comprises of four clear layers that can be seen through a light microscope. These are: cornified layer (stratum corneum), clear layer (stratum lucidum), granular layer (stratum granulosum), spinous or prical cell layer (stratum spinosum) and basal layer (stratum basale). The dermis is 20-40 times thicker than the epidermis. It is divided into two layers from deep to superficial as follows - S Reticular layer and papillary layer. These 7 layers of skin can be correlated with 7 layers of Sushruta, on the basis of their number, thickness, function and diseases occurring in it, e.g. according to Sushruta Vedini is the 5th layer of Tvak and it is the seat of Kushtha and Visarpa Vyadhi. According to modern medicine in diseases resembling Kushtha and Visarpa e. leprosy and systemic lupus erythematous, nerve ending are involved. These nerve endings are present in papillary layer. Hence Vedini can be correlated with papillary layer.

2. Discussion on Review of Dadru and Dermatophytosis:-
According to CharakaDadru is a type of Kushtha which occurs in fourth layer of Tvak. It has predominance of Pitta and KaphaDosha. It is characterized by raised patches associated with itching, redness and papules. According to SushrutaDadru is spreading in nature and has colour like Tamra or Atasipushpa

Modern science explained that the dermatophytosis is Keratinophilic, so they grow in the Keratin of the Stratum Corneum, layer of skin.

Clinical features of Dermatophytosis are intense itching, annular erythematous scaly lesions, the active border consist of papulovesicular lesions, and in advancing stage the lesions spread peripherally with central clearing and pigmentation.

Similarly Mudhukoshkara, a commentator of ‘Madhavanidana’ stated ‘AsitetarDadru’ which occurs superficially having Lakshana-Kandu (itching), Raga (redness), Pidaka (pimples) and UdagataMandala (raised patch)

Thus from the above statements, one can say that the ‘Dadru’Kushtha according to Ayurved and Dermatophytosis of modern science shows symptoms wise resemblance between each other.

Kushtha in Ayurved and Dermatophytosis of modern science is a contagious disease. Most of the predisposing factors from modern science are already explained in Ayurveda. Factors affecting are heat, humidity, tropical climate, poor nutrition, hygiene and also sharing of personal articles like cloths, comb, blades, cap, bed etc. Trichophytonrubrum is the most common dermatophyte responsible for Dermatophytosis. According to Ayurveda there is no such microorganism but Hetusevan which vitiatesPitta and KaphaDosha are responsible for Dadru.

It is seen that Charaka and Sushruta have no uniformity in classifying the kinds of Kushtha.e.g.Dadru and Siddhna is included under Mahakushtha and Kshudra-kushtha by Sushruta and Kshudra-kushtha and Mahakushtha by Charaka respectively.

MadhukoshTika of Madhavanidana has clarified and stated that a deep rooted Dadru (i.e.AsitaDadru) is included under Mahakushta whereas superficially occurring Dadru (i.e.AsitetarDadru) is included under Kshudra-kushtha by Charaka.

Skin Biopsy of lesions shows keratinized stratum corneum. there is no living tissue invaded, shedding of the stratum corneum is
increased by inflammation. From this examination we can say that Dermatophytosis is superficial fungal infection.

**CONCLUSION**

From the detailed conceptual compilation, critical review, clinical observations and discussion the following conclusion are evolved.

- *Tvak Sharir* according to *Ayurved* and Anatomy of skin in modern science can be correlated on the basis of thickness, function, morphology and diseases affecting it.
- ‘*Dadru*Vyadhi’ a type of *Kushtha* and Dermatophytosis a type of skin diseases have almost all the similar sign and symptoms which are correlated on the basis of literary and clinical study from both *Ayurveda* and Modern point of views.
- *Dadru* (i.e ‘*AsitetarDadru*’) is superficially limited; similarly Dermatophytosis is confined to Stratum Corneum with some Anatomical changes.
- ‘*Dadru*’i.e.’*AsitetarDadru*’ in *Ayurveda* is nothing but Dermatophytosis (Tinea/Ringworm) in modern science. *Dadru* is common disorder affecting large number of people. This disease can be cured with the help of local as well as systemic treatment modalities. *Ayurved* has described variety of local treatment modalities like *Lepa, Parisheka, Dhupan, Snehan, Panchakarma* etc.
- For understanding the pathology of such disease as well as role of local treatment modality in this disease, it becomes essential to know *Tvak Sharir* and *Dadru* in detail. Thus the present study will be helpful in the treatment of *Dadru*. 


REFERENCES