



### Correlative study of *bhrajak pitta* and melanin

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#### ABSTRACT-

*Dosa dhatu mala* are the basic principles of Ayurveda. In Ayurveda *vata*, *pitta*, *kapha* are the main 3 types of *dosa*. According to *Vagbhata pitta* has these main function namely *pakti* (digestion), *ushma* (maintain proper body temperature), *darshan* (vision), *kshudha* (hunger), *trushna* (thirst), *prabha* (lustre) to skin, *medha* (intellect). Pathological increase in *Pitta* causes yellow coloured skin and eyes and decrease in *Pitta* causes loss of lustre and low glorification (*prabhahani*). *pitta* has five subtypes *Aalochak*, *Ranjak*, *Sadhak*, *Pachak* and *Bhrajak pitta*. *Bhrajak pitta* is located in skin and its functions are regulation of body heat and maintain normal skin colour and absorption and digestion of medicine applied on skin. According to modern science the colour of skin depends upon melanin concentration. Excess level of melanin results in skin tanning while absence of melanin causes albinism. Co- relative study of *Bhrajak*

*Pitta* and melanin may helpful to *ayurvedic* students to understand *ayurvedic* concept *Bhrajak pitta* in modern point of view hence, detail study of *Bhrajak pitta* and Melanin in has been elaborated in this article.

**KEY WORDS:** *Bhrajak pitta*, melanin, skin, *avbhasini twacha*

#### INTRODUCTION:

*Tridoshas* viz., *Vat*, *Pitta*, *Kapha* pervade throughout the body. *Sthana* of *doshas* are described in *Ashtanghriday*.<sup>1</sup> Out of which *Sthana* of *Pitta* are *Nabhi* (umbilicus), *Aamashaya* (stomach), *Sweda* (sweat), *Lasika* (serum), *Rudhir* (blood), *Rasa*, *Drik* (eyes), *Sparshanedriya* (skin)<sup>2</sup>. *Pitta* has *Aalochak*, *Ranjak*, *Sadhak*, *Pachak* five subtypes<sup>3</sup>. Out of five subtypes *Bhrajak Pitta* is located in the skin. Main function of *Bhrajak Pitta* is to maintain colour and luster of skin<sup>4</sup>. It has also been stated that it governs the normal and abnormal temperature of the body. According to

*Arundatta pachan* of *lepan dravya*, *abhynga dravya* etc is carried out by *Bhrajak Pitta*<sup>5</sup>.

*Acharya charak* has not described this *Bhrajak pitta* as separate entity but he included the function attributed to it among those of *pitta* in general. *Aacharya chakrapani* in this commentary has stated that regulation of body heat and variation in colour of body are the functions of *Bhrajak Pitta*<sup>6</sup>.

*Aacharya Sushrut*, *Bhela* and *Vagbhata* have mention separate types of *Pitta*. According to *Sushruta* the *pitta* is located in the skin is called as *Bharjakagni*.<sup>7</sup> It digest and utilize substances used for *abhyang*, *parisheka*, *lepana*, *avagaha* etc.<sup>8</sup> It irradiates the glow of natural complexion.

### AIMS AND OBJECTIVES:

To realize the concept of *Bhrajak pitta* easily with respect to melanin.

### MATERIALS AND METHODS:

As this is review article, concept is thoroughly explain with the help of *Ayurvedic Samhita* like *Charak Samhita*, *Sushrut Samhita*, *Ashtang Hridaya*, *Bhel Samhita* and modern text book as well as website.

### DISCUSSION

The functions of *Bhrajak Pitta* from the citation about that,

1) The production of normal and abnormal heat of the body

2) The production of normal and abnormal colour of the skin

3) Absorption and digestion of substances used together with oils decoction etc.

According to *Bhelsamhita*, "*Bhrajak Pitta* create different *Prabhas* (hues) of the head, hands, feet, sides, back, abdomen, thighs, face, nails, eyes and hair it also brighten them<sup>9</sup>. It may be stated that *Bhrajak pitta* may represent the factor which are responsible for the colour of skin and other structures.

### Location of *Bhrajak Pitta*-

According to *Sushruta* the skin has seven layers viz., *Avabhasini* which is a first layer and it reflect all colours<sup>10</sup>. *Charaka* while enumerating the six layers of skin has named the first two only *udakadhara* and *asrugdhara*<sup>11</sup> which can be included as a site of *Bhrajak Pitta*. *Vagbhata* referred 7 layers of skin but has not named them.<sup>12</sup>

### Modern point of view of skin

The skin is composed of two major layers: a superficial epidermis and a deeper dermis. The epidermis consists of several layers beginning with the innermost (deepest) stratum basale (germinatum), followed by the stratum spinosum, stratum granulosum, stratum lucidum (when present), and ending with the outermost layer, the stratum corneum. The topmost layer, the stratum corneum, consists of dead cells that shed periodically and is progressively replaced by cells formed from the basal layer. The stratum basale also contains melanocytes, cells that produce melanin, the pigment primarily

responsible for giving skin its color. Melanin is transferred to keratinocytes in the stratum spinosum to protect cells from UV rays.

The dermis connects the epidermis to the hypodermis, and provides strength and elasticity due to the presence of collagen and elastin fibers. It has only two layers: the papillary layer with papillae that extend into the epidermis and the lower, reticular layer composed of loose connective tissue. The hypodermis, deep to the dermis of skin, is the connective tissue that connects the dermis to underlying structures; it also harbors adipose tissue for fat storage and protection<sup>13</sup>.

Melanin is formed by melanoblast which is present normally in basal layer of epidermis and dermis. Melanogenesis is initiated by exposure to UV radiation causing skin darken. Melanin is effective absorbent of light. The pigment is able to dissipate over 99.9 percent of absorbed UV radiation. Because of this property melanin protect skin cells from UV radiation damage, reducing the risk of folate depletion and dermal degradation. The studies have shown that lower incidence for skin cancer in individuals with more concentrated melanin. It is a polymer of amino acid tyrosine. After the formation of melanin in the pigment granules are stated to be migrating to the cells of epithelium where they are phagocytized. Melanoblast protects epithelial cell nucleus from UV rays. The colour of skin depends upon the distribution of melanoblast and the melanin concentration.<sup>14</sup>

The number and distribution of melanin producing cells of the body vary from individual to individual they are

genetically determined. In albinos the melanin forming cells have been shown to be entirely absent from the tissue to the extent the factors which confer on the skin, its characteristic normal colour is metabolically produced by specialized cell melanocytes in the skin by enzyme tyrosinase to that extent. We have a confirmation of claim of *Ayurveda* that there exist a layer of skin known as *Avabhasini* and a *pittagni* known as a *Bhrajak pitta* which is responsible for providing the skin with that pigment which confers on its characteristic normal colour. The same is also true for the colour of other structures of the body has the hair, eyes, etc., which according to *Bhela* is due to *Bhrajak Pitta*.<sup>15</sup>

Except *Chakrapani Datta* no other authority on *Ayurveda* has attributed the function of heat production to *Bhrajaka pitta*<sup>16</sup>. According to modern science the heat produced as a result of metabolic process which taking place all time in body especially in muscles. The great mass of blood is brought close to the body surface and surface materials capillaries are dilated larger radiation of surface is represented and thus enhance the heat loss if the blood is moved away from the skin surface to the interior it is protected the heat loss become minimal. The arterioles and capillaries of which together with sweat glands respond to thalamic regulation of heat and normal body temperature within average range 98.4 degree F is maintained. Thus we can say that there is role of *Bhrajak Pitta* on production and regulation of heat.

In *Ayurvedic* view *dravyas* used for *abhyanga, avagaha, pralep* and *parishek* are digested and absorbed through skin. Thus skin is impermeable to watery solution of

salts and other substance. It is possible to produce certain amount of absorption by application of substance through fatty vehicles.

## CONCLUSION-

From above discussion we conclude that location and functions of *Bhrajak Pitta* and melanin are partially similar. That's why we may correlate *Bharjak Pitta* with melanin.

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