

THE PHYSIOLOGY STUDY OF BHRAJAK PITTA W.S.R SKIN COLORATION**Nisha Jakhar¹, Rajesh Kumar Sharma², Dinesh Chandra Sharma³**¹P.G. Scholar, P.G. Department of *Kriya Sharir*, DSRRAU, Jodhpur, Rajasthan, India²Professor and H.O.D., P.G. Department of *Kriya Sharir*, DSRRAU, Jodhpur, Rajasthan, India³Associate Professor, P.G. Department of *Kriya Sharir*, DSRRAU, Jodhpur, Rajasthan, India**Corresponding Author:** nishajakhar1994@gmail.com<https://doi.org/10.46607/iamj2510012022>

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Article Received: 08/12/2021 - **Peer Reviewed:** 17/12/2021 - **Accepted for Publication** 18/12/2021**ABSTRACT**

Dosa that mala are the primary ideas of Ayurveda. In Ayurveda vata, pitta, kapha are the principal three sorts of dosa. Agni placed in Pitta dosha is viewed accountable for all transformations taking location in the physique like metabolic reactions, hormonal moves etc.¹ Pitta dosha have 5 divisions relying on the web page and mode of action. Pathological amplify in Pitta reasons yellow-coloured pores and skin and eyes and minimize in Pitta reasons loss of lustre and low glorification (prabhahani). Pitta has 5 subtypes Aalochak, Ranjak, Sadhak, Pachak and Bhrajak pitta. Bhrajak pitta is placed in pores and skin and its features are legislation of physique warmness and preserve ordinary pores and skin colouration and absorption and digestion of medicinal drug utilized on skin. Ayurveda is a historical fitness science that helps in the eradication of sickness as properly as retaining the fitness of a wholesome person. Its varieties are a valuable base of Indian culture. It is fantastic amongst all the fitness sciences due to the fact of its primary Sidhantas e.g., Tridoshas, Panchmahabhootas, Dincharya, Ritucharya, Sadvrta etc. Now a day's due to western culture, it is very challenging to comply with the schedules as described in Ritucharya, Dincharya of Ayurveda science and due to disturbed dwelling fashion bodily as properly as intellectual illnesses are increasing. According to cutting-edge science, the colouration of pores and skin relies upon melanin concentration. Excess stage of melanin outcomes in pores and skin tanning whilst the absence of melanin reasons albinism.

Keywords: Ayurveda, Bhrajak Pitta, Melanin, MSH, Avbhasini Twacha, Pitta

INTRODUCTION

Tridoshas viz., Vat, Pitta, Kapha pervade all through the body. The Pitta Dosha is regarded as the 2nd quantity in the Dosha triad after Vata Dosha. The period Pitta derived from the root which ability to heat, to burn or to warm. Pitta is having the predominance of Agni Mahabhuta two². So, the Pitta Dosha is that entity in the physique which is accountable for all fire-place like moves i.e. digestion and metabolism in the body. Caraka Acarya has stated that the Agni which is positioned in the Pitta Dosha offers upward jab to detrimental or advisable penalties when it is in peculiar or ordinary circumstance respectively three³. Pitta is of two varieties. The first one is fluid and unctuous, the natural range controlling the physiological features and the 2d one is Nirdrava and Rooksha that motives Jwara and different illnesses four. Biologically if we reflect on consideration on the characteristics noted by using Acaryas, Pitta is a mixture of warmth and liquid. Due to its liquid nature, Pitta is mobile. As the Dahana and Pacana karmas of the physique are taking place due to the motion of Pitta, it is recognised as the Anta-ragni or inside fire⁴. Acharaya Sushruta has given the title Bhrajaka Agni to the Bhrajaka Pitta. It is located in the pores and skin, and it continues the herbal complexion of skin, absorbs the perspired section of skin, and helps in the expression of glowiness of pores and skin etc⁵. It surely explains that the everyday texture of pores and skin absolutely relies upon Bhrajaka Agni or Pitta. At the time of embryo formation, the state of affairs of Bhrajaka Pitta has acquired constant in the pores and skin and the colouration develops, is in accordance to the quantity of Bhrajaka Pitta. At the time of embryo formation, when the collaboration of Tridosha (Vata, Pitta and Kapha) takes place with Shukra and Shonit, the Prakrati is determined, and colouration is additionally in accordance with the quantity of Bhrajaka Pitta which can be maximum, medium or minimum⁶.

So, if considered on the above-noted basis, the Tridoshas additionally appears to be existing in a variable amount. Its capacity the herbal stage and quantity of Bhrajaka Pitta (a kind of one of the Tridosha) must be determined at the time of embryo formation so that

the regular texture of physique ought to additionally get determined at that time. This complete procedure needs to have de-pendency over Bhrajaka Pitta.

MATERIALS AND METHODS: -

Sthana of pitta dosha: -

1. Nabhi (umbilicus)
2. Aamashaya (stomach)
3. Sweda (sweat)
4. Lasika (serum)
5. Rudhir (blood)
6. Rasa
7. Drik (eyes)
8. Sparshanedriya (skin)⁷.

There are certain specific sites mentioned by Acaryas for Pitta, they are Amasaya, Pakvamasaya Madhya and Nabhi

Types of pittsa dosa: -

Firstly, the Acharaya Sushruta has given the five names of types of Pittas as follows –

1. Pachaka Pitta
2. Ranjaka Pitta
3. Sadhaka Pitta
4. Aalochaka Pitta
5. Bhrajakaa Pitta².

The function of pitta dosa: -

1. Visual perception
2. Production of hunger, appetite, digestion and thirst
3. Heat production and body temperature
4. Maintains colour, complexion and lustre of skin
5. . Renders skin is soft and thin
6. Courage, lucidity and cheerfulness of mind
7. Mental and intellectual power of brain
8. Maintains health by improving digestion and cellular activity⁶

BHRAJAKA PITTA: -

The period Bhrajaka is derived from "Bhrajja" Dhatu which capability Kaanti or the one which continues the herbal complexion of the skin. The Pitta which is accountable for the manufacturing of "Bha" (complexion) of pores and skin is referred to as Bhrajaka. It is cited that the manufacturing of ordinary and extraordinary temperature of the physique as properly as the regular and atypical colour of the pores and skin which

is noted as amongst the features of Pitta are attributed to Bhrajaka Pitta³.

Location of Bhrajak Pitta: -

1. According to Sushruta the pores and skin have seven layers viz., Avabhasini which is the first layer and it replicates all colours.
2. Charaka whilst enumerating the six layers of pores and skin have named the first two solely udakadhara and asrugdhara 1 which can be protected as a website online of Bhrajak Pitta.
3. Vagbhata referred to 7 layers of pores and skin, however, has now not named them⁸.

Functions of Bhrajaka Pitta: -

1. the Main characteristic of Bhrajak Pitta is to hold shade and lustre of skin.
2. It has additionally been referred to that it governs the regular and atypical temperature of the body.
3. According to Arundatta pachan of lepan dravya, abhynga dravya and so forth is carried out through Bhrajak Pitta.
4. Acharya Charak has now not described this Bhrajak pitta as a separate entity however he covered the feature attributed to it amongst these of pitta in general.
5. Aacharya chakrapani in this commentary has referred to that law of physique warmth and variant in the shade of physique are the features of Bhrajak Pitta.
6. Aachrya Sushrut, Bhela and Vagbhata have pointed out separate sorts of Pitta. According to Sushruta the pitta is placed in the pores and the skin is referred to as Bharjakagni.
7. It digests and make use of resources used for abhyang, parisheka, lepana, avagaha etc.
8. It irradiates the glow of herbal complexion⁷.

Role of Bhrajak Pitta in colouration of Skin: -

1. According to Ayurveda Acharya Charak has commonplace the view of Marichi that prakrat and vikrat complexion of pores and skin relies upon on the Prakrat & Vikrat functioning of Pitta. Maintenance and variant of physique temperature, variant in the regular complexion of body, these come beneath the functioning vary of Pitta. AcharayaCharaka has covered

softening and shining of physique beneath trying of Pitta1.

2. Acharaya Sushruta has truly noted 5 sorts of Pitta and their Sthanas. He has described Bhrajaka Pitta in the structure of Bhrajaka Agni and has generic pores and skin as its Adhishtana. Bhrajaka Pitta is current in the skin, as a result, it absorbs the substance used in the technique of Abhyanga, Avasechana, Avagahana and Aalepa. Its capacity helps in perspiration, wetting and shining of pores and skin and protection of physique temperature. Here it can be truly understood that Bhrajaka Pitta has a different contribution in the direction of keeping the herbal colour of skin2.

3. In Sharangdhar samhita it is clarified that Bhrajaka Pitta in the pores and skin offers a coloured look to the skin. It offers glitter to the skin. In the 'Deepika' commentary of Shrangdhara Samhita, Acharya Aadhmalla has referred to that Bhrajaka Pitta digest the elements utilized on the skin and makes the pores and skin glow due to Ushna Guna current in it. ("World Journal of Pharmaceutical Research et al. World ...") According to Acharya Sharangdhara, the pores and skin is an indication solely to its outermost layer i.e., Avabhasini, its skill out of seven layers of pores and skin solely the Avabhasini contributes in performing the above functions. Other layer's function features which are unique structure Avabhasini's functions.

MODERN REVIEW: -

The quite several hues of pores and skin colour will rely on the depth of quite several pigments existing in the dermis of the skin. Various pigments that impart an extensive range of pores and skin hues are Melanin, Haemoglobin and Carotene. The number of Melanin reasons the skin's colour to differ from faded yellow to reddish-brown to black. Melanocytes: Only Melanin producing cells in the physique are Melanocytes current especially in the pores and skin and eyes. The number of Melanocytes is about identical in all people. The quantity of Melanin produced and transferred to Keratinocytes determines the variations in pores and skin colour. Melanocytes synthesize Melanin from the amino acid Tyrosine in the presence of an enzyme referred to as Tyrosinase in the organelle referred to as Melanosome. On publicity to UV rays: Exposure to

UV rays will increase the enzymatic pastime inside the Melanosomes and accordingly will increase the Melanin production. Both the amount and darkness of Melanin increase, inflicting pores and skin tanning. Tanning protects the physique from in addition UV radiations. Melanin: Melanin absorbs UV radiation. It prevents harm to DNA in epidermal cells. It additionally neutralizes the free radicals that are shaped as a result of UV exposure. A tan is misplaced when Melanin containing Keratinocytes are shed from the Stratum Corneum¹².

Melanocyte Stimulating Hormone (MSH): MSH is secreted via the intermediate lobe of the Pituitary gland. An expansion in MSH will reason the darkening of the pores and skin colour. ACTH and MSH share the identical precursor molecule, Proopiomelanocortin (POMC). Cushing's syndrome due to extra ACTH may also additionally purpose hyperpigmentation (Acanthosis nigricans). The degree of MSH will increase in people at some point in pregnancy. Different degrees of MSH is now not the primary reason for racial version in pores and skin colour. There are editions in their hormone receptors inflicting them now not to reply to MSH in blood. Deficiency of melanin leads to Albinism (hypopigmentary congenital disorder)¹².

1. Haemoglobin: Light-skinned folks have much less Melanin in the Epidermis. The epidermis seems translucent and pores and skin colour levels from red to pink rely on the Oxy-gen content material of the blood transferring via the capillaries of the Dermis. The red colouration is due to Haemoglobin, the Oxygen carrying pigment in Red Blood Cells. The amount and nature of Hemoglobin that circulates in the cutaneous blood vessels play a necessary function in the colouration of the skin. ("World Journal of Pharmaceutical Research et al. World ...") Skin becomes i. Pale, when haemoglobin content material decreases. ii. Pink, when blood rushes to pores and skin due to cutaneous vasodilatation (blushing). iii. Bluish for the duration of cyanosis, which is brought on by using an extra quantity of decreased Hemoglobin. Carotene: Carotene is a yellow-orange pigment, which is the precursor of Vitamin A, used to synthesise pigments wished

for vision. Stored in Stratum Corneum and fatty areas of Dermis and Subcutaneous layer. The impact of greater consumption of Carotene wealthy meals is extra apparent in light-skinned individuals. Heat Gain or Heat Production¹².

2. In The Body Various mechanisms concerned in warmth manufacturing in the physique are:

1. Metabolic Activities
2. Muscular Activities
3. Role of Hormones
4. Radiation of warmth from the surroundings
3. Shivering
4. Brown Fat Tissue Heat Loss from the Body: Maximum warmth is misplaced from the physique thru pores and skin and a small quantity of warmth is misplaced thru the Respiratory system, kidney and GI tract. When the environmental temperature is much less than physique temperature, warmth is misplaced from the body¹². Heat loss happens by means of the following methods:
5. Conduction (3%)
6. Convection (60%)
7. Radiation (15%)
8. Evaporation (insensible perspiration) (22%)

Panting Regulation of Body Temperature: Body temperature is regulated through the Hypothalamus, which units the regular vary of physique temperature. The set factor below regular physiological stipulations is 37°C. Hypothalamus has two facilities that adjust the physique temperature, they are. Heat loss middle two Heat reap centre. Heat Loss Center: Situated in Preoptic nucleus of anterior Hypothalamus. ("Functions of skin regulation of body temperature") Neurons in the Preoptic nucleus are warmth touchy nerve cells, which are referred to as thermoreceptors. Stimulation of the Preoptic nucleus reasons cutaneous vasodilatation and sweating. Removal or lesion motives extend the physique temperature. Heat Gain Center: Otherwise recognised as Heat Production Center located in Posterior Hypothalamic nucleus. Stimulation of posterior hypothalamic nucleus reasons shivering. Removal or lesion reasons fall in physique temperature. Role of Skin in Regulation of Body Temperature: Skin performs a necessary function in the rules of physique

temperature. Excess warmth is misplaced from the physique via pores and skin via radiation, conduction, convection and evaporation. Sweat glands of the pores and skin play an energetic section in warmth loss, via secreting sweat. The lipid content material of sebum prevents the loss of warmth from the physique in a bloodless environment. Thermoregulation: Homeostatic legislation of physique temperature¹².

10. Skin contributes to thermoregulation in two ways: - 1. Liberating sweat at the floor two Adjusting the go with the flow of blood in the dermis Sweat manufacturing from Eccrine glands will increase in response to excessive environmental temperature or warmth produced via exercise. Evaporation of sweat from the pores and skin floor helps to limit the physique temperature. Blood vessels in the Dermis dilates, for this reason, greater blood flows thru the dermis, which will increase sweating and the quantity of warmth loss from the body. In case of low environmental temperature, much less manufacturing of sweat takes place and warmth is conserved.

The pores and skin are composed of two main layers: a superficial dermis and a deeper dermis. ("Biology for Majors II – The secret to comprehensive beauty ...") The dermis consists of quite a few layers opening with the innermost (deepest) stratum basale (germinatum), observed by using the stratum spinosum, stratum granulosum, stratum lucidum (when present), and ending with the outermost layer, the stratum corneum. ("5.1 Layers of the Skin – Anatomy & Physiology") The topmost layer, the stratum corneum, consists of useless cells that shed periodically and are gradually changed by way of cells shaped from the basal layer. The stratum basale additionally consists of melanocytes, cells that produce melanin, the pigment principally accountable for giving pores and skin its color¹².

7. Melanin is transferred to keratinocytes in the stratum spinosum to defend cells from UV rays. The dermis connects the dermis to the hypodermis and affords energy and elasticity due to the presence of collagen and elastin fibres. ("5.1 Layers of the Skin – Anatomy & Physiology") It has solely two layers: the papillary layer with papillae that prolong into the dermis and the lower, reticular layer composed of unfastened

connective tissue. ("What 2 layers make up the dermis?") The hypodermis, deep to the dermis of the skin, is the connective tissue that connects the dermis to underlying structures; it additionally harbours adipose tissue for fat storage and protection. ("5.1 Layers of the Skin – Anatomy & Physiology") Melanin is fashioned by means of melanoblast which is current commonly in the basal layer of dermis and dermis. Melanogenesis is initiated through publicity to UV radiation inflicting pores and skin darkening. Melanin is a fantastic absorbent of light. The pigment is in a position to dissipate over 99.9 percentage of absorbed UV radiation. Because of this property melanin shields pores and skin cells from UV radiation damage, lowering the threat of folate depletion and dermal degradation. The research has proven that decrease incidence for pores and skin most cancers in persons with greater focused melanin. It is a polymer of amino acid tyrosine. After the formation of melanin in the pigment, granules are referred to be migrating to the cells of epithelium the place they are phagocytized. Melanoblast protects the epithelial telephone nucleus from UV rays¹².

8. The shade of pores and skin relies upon the distribution of melanoblast and the melanin concentration. The quantity and distribution of melanin-producing cells of the physique range from person to person they are genetically determined. In albinos the melanin forming cells have been proven to be absent from the tissue to the extent the elements which confer on the skin, its attribute everyday shade is metabolically produced by using specialised cellphone melanocytes in the pores and skin via enzyme tyrosinase to that extent¹².

9. We have an affirmation of declaring of Ayurveda that there exist a layer of pores and skin recognized as Avabhasini and a pittagni acknowledged as a Bhrajaḳ pitta which is accountable for presenting the pores and skin with that pigment which confers on its attribute ordinary colour. The identical is additionally proper for the colour of different constructions of the physique has the hair, eyes, etc., which in accordance with Bhela is due to Bhrajaḳ Pitta. Except for Chakrapani Datta, no different authority on Ayurveda has

attributed the feature of warmth manufacturing to Bhrajaka pitta³.

10. According to present-day science the warmth is produced as a result of the metabolic method which takes region all-time in physique specifically in muscles. The amazing mass of blood is introduced shut to the physique floor and floor substances capillaries are dilated large radiation of floor is represented and as a result beautify the warmth loss if the blood is moved away from the pores and skin floor to the indoors it is blanketed the warmth loss come to be minimal. The arterioles and capillaries of which collectively with sweat glands reply to thalamic law of warmth and everyday physique temperature inside common vary 98.4 diploma F is maintained. Thus, we can say that there is a function of Bhrajak Pitta on manufacturing and the law of heat. In the Ayurvedic view dravyas used for abhyanga, avagaha, pralep and parishek are digested and absorbed even through the skin. Thus, pores and skin are impermeable to watery answers of salts and different substances. It is feasible to produce a sure quantity of absorption with the aid of the utility of substance via fatty vehicles¹².

DISCUSSION

The features of Bhrajak Pitta from the quotation about that, 1) The manufacturing of regular and bizarre warmth of the physique 2) The manufacturing of regular and ordinary shade of the skin 3) Absorption and digestion of components used collectively with oils decoction etc. According to Bhelsamhita, " Bhrajak Pitta create exceptional Prabhas (hues) of the head, hands, toes, sides, back, abdomen, thighs, face, nails, eyes and hair it additionally brightens them⁹. It may additionally be cited that Bhrajak pitta canal-so symbolizes the component which is accountable for the colour of pores and skin and different structures.

Ushma and Varna are the features attributed to Bhrajaka Pitta. Derangement of Bhrajaka Pitta will reason faulty administration of Ushma and Varna of Twak is additionally affected. Sweda is one of the seats of Pitta. Sweat performs a necessary function in keeping the ordinary physique temperature. In the case of Albinism, each of the features of Bhrajaka Pitta i.e

Ushma and Varna are hampered. So, a character with Albinism can't get uncovered to heavy daylight as their physique temperature will get increased. The colour of pores and skin will in general rely upon the pigment Melanin and MSH hormone secreted from the Pituitary gland. Melanin is additionally having a function in temperature law also¹².

CONCLUSION

Skin covers the total physique as properly as is the seat of Sparshnendriya. Skin additionally consists of Swedveha Srotas and Lomkupa. Acharaya Charaka and Sushruta have given 6 & 7 sorts of Twacha respectively in which the outermost layer is skinny & helps in the expression of Varna (Complexion, Lustre etc.) and the different layers help in the safety of the body. From a cutting-edge factor of view functioning of Bhrajaka Pitta is regulated with the aid of oily/ Sebaceous glands and the warmth existing in the skin. These sweat and sebaceous glands, in their herbal stage, are immediately affected by way of Bhrajaka Pitta whilst functioning. Although the stimulating elements of these glands are located in worried structures they are regulated through the warmth of the body. That's why if the temperature of the physique will increase through a workout, then perspiration additionally increases. Due to this motive warmth of the physique can be referred to as BhrajakaPitta and melanin pigment (Ranjaka Dravya) can additionally be associated with the warmth of the body. Peoples dwelling in the warm local weather have extra melanin pigment and these having extra exposure to the solar mild will have melanin pigment in accelerated amount. So, by way of the treating BhrajakPitta via Jatharagniwe can deal with Shvitra also. From the above dialogue, we conclude that the vicinity and features of Bhrajak Pitta and melanin are in part similar. That's why we can also correlate Bhrajak Pitta with melanin. Bhrajaka pitta placed in the pores and skin is accountable for the manufacturing of everyday and peculiar shade of the pores and skin as nicely as every day and extraordinary physique temperature. MSH secreted from Pituitary regulates the Melanin manufacturing from the Melanocytes placed in the Epidermis of the skin.

Skin which is stated as the seat of Bhrajaka Pitta plays the principal position in rules of physique temperature in response to any change in exterior or interior surroundings with the assist of sweat and pigment Melanin.

otherwise noted, Chapter 5. The In-tegumentary System/5.1 layers of skin.

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