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***Alochaka Pitta* in Modern Physiological Perspective: A Review**

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ABSTRACT

Concept of *Tridosha* is a unique concept of Ayurveda. *Tridosha* (*Vata*, *Pitta* and *Kapha*) are the primary pillars of the human body. *Tridosha* control voluntary and physiological functions of body movements, and support the body in a normal and healthy state. *Pitta* is responsible for production of heat, body temperature and visual perception. There are five types of *Pittas*, namely *Ranjaka*, *Pachaka*, *Alochaka*, *Sadhaka*, *Brajaka*. '*Alochaka Pitta*' means the *Pitta* which is responsible for vision. '*Drishti*' is the seat of *Alochaka Pitta*. Ayurveda has described this physiology of vision based on the functions of *Vata* and *Pita*. *Alochaka Pitta* is represented by the pigments of retina viz rhodopsin, iodopsin and melanin. Rods and cones which are present in retina are responsible for colour vision and for the perception of shape and bright image. In this review article location and function of *Alochak Pitta* and its modern correlations with the physiology of vision is described.

KEYWORDS

Tridosha, *Alochaka Pitta*, *Rods*, *Cones*



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INTRODUCTION

Life starts from a fertilised ovum. *Vatta*, *Pitta* and *Kapha* are the constituents of all the cells including sperm and ovum which unite and give birth to a new individual. *Dosha* is forming the temperament or *Prakriti* of an individual by birth and also having the independent power of producing diseases. *Dosha* is responsible for formation, maintenance and protection of the body during its physiological condition. *Doshas* are of three types namely *Vata*, *Pitta* and *Kapha*¹. Maharshi Sushruta called it as “*Tristhuna*” like the house is based on pillars (*Sthuna*) in the same manner body is based on this *Tristhuna*. When *Vata*, *Pitta* and *Kapha* are vitiated they produce disease and when they are in equilibrium, they maintain perfect balance and harmony in the body. *Pitta* represents energy, heat or fire in the body and performs fire like actions in the body. The *Pitta* in the body which is located in the form of *Agni* is responsible for digestion and metabolism. *Pitta* is having dominance of *Agni Mahabhuta*. The actions like *Dahana*, *Pachana* cannot occur in the body without *Pitta*². *Pitta* helps in good vision, digestion of the ingested food and its metabolism. It maintains the normal body temperature, normal production of hunger, thirst, appetite,

and complexion, lustre of the body, intelligence, courage, valor, pleasure and softness of the body³. *Alochaka Pitta* means the *Pitta* which is responsible for vision. *Alochaka Pitta* enables us to see things, perceive and analyse them. *Drishti* or eyesight is the seat of *Alochak Pitta*. *Drishti* means vision, that which enables us to see things around us and perceive them in the right sense^{4, 5}. *Alochaka Pitta* is represented by the pigments of retina viz rhodopsin, iodopsin and melanin. Rods and cones which are present in retina are responsible for colour vision and for the perception of shape and bright image. Rods and cones are visual receptors which converts the energy into electrical potentials through some chemical reactions⁶.

AIMS & OBJECTIVES

1. To understand the functions of *Alochak Pitta*.
2. To make probable functional comparison of *Alochak Pitta* and modern physiology of vision.

MATERIALS & METHODS

The *Bruhatrayi* were scrutinised regarding the references for the concept of the *Alochaka*



Pitta. Later, physiological aspects of the eye with reference to sense of vision were studied from modern physiology books. Later, supportive correlation was done between Ayurvedic and modern views.

TYPES OF ALOCHAK PITTA- *Acharya Bhela* described two types of *Alochaka Pitta*.

1. *Chakshur Vaisheshika Alochak Pitta*
2. *Buddhi Vaisheshika Alochak Pitta*

1. CHAKSHUR VAISHESHIKA ALOCHAK PITTA

This component of *Alochaka Pitta* is confined to eye i.e. only anatomical eye. The visual perception takes place after coordination of these components.

- *Chakshuindriyaartha* - When we see the objects
- *Chakshuindriya* - Organ of visual perception, all components of anatomical eye involved in perceiving the image of object.
- *Manas* - Mind discriminates between the visual objects which are beneficial and those which are harmful.
- *Ahankara* - Egoism of an individual will impart the dominance and claim to perceive the things.
- *Buddhi* - Intellect judges if the information should be accepted or not.
- *Atma* - Soul will experience the perception after being associated with mind.

2. BUDDHI VAISHESHIKA ALOCHAK PITTA-

This component of *Alochaka Pitta* is located beyond the eyes in brain. It is located in the regions of *Sringhataka* between the eyebrows. It perceives the minute and extraordinary matters produced in *Atma* (consciousness). This part of vision *Pitta* enables in retention of gathered information in mind. Memorizing the past events, imagines the events that are likely to happen in future and creates imaginary events as if they have taken place now at present. Expresses the thoughts, which it has received and retained in it. In the newborn baby, it induces the desire and technique of sucking the breast milk as if trained by some person. Give the power of *pratyahara* to the *yogis*⁷.

OVERALL FUNCTIONS OF ALOCHAKA PITTA

There are two components which play an important role in the function of *Alochaka Pitta*. One of its components *Chakshur Vaisheshika Alochaka Pitta* is confined to eye. It helps in perceiving the seen objects. It helps in identifying and knowing various aspects of objects.

The second component of vision *Pitta* located between the eyebrows in the region of *Sringhataka*, represents the central controls



of vision, located in frontal area of brain. This helps in retaining the visual information and later recollecting the saved information through memory, imagination and concentration.

PHYSIOLOGY OF VISION IN MODERN ASPECT

Visual process is the series of actions that take place during visual perception. During visual process, image of an object focused on retina, resulting in the production of visual perception of that object. When the image of an object in environment is focused on retina, the energy in visual spectrum is converted into electrical potentials by rods and cones of retina through some chemical reactions. Impulses from rods and cones reach the cerebral cortex through optic nerve and the sensation of vision is produced in cerebral cortex⁸. Retina contains the visual receptors, which are also called photoreceptors or electromagnetic receptors. Visual receptors are rods and cones⁹. They are responsible for colour vision and perception of sharp, bright images. Rods are particularly sensitive to dim light and they serve, predominantly in the detection of motion. Rhodopsin is the photosensitive pigment of rod cells. It is made up of a protein called opsin and a chromophore. Opsin present in rhodopsin is

known as scotopsin. Chromophore present in the rod cells is called retinal¹⁰. Retinal is present in the form of 11-cis retinal known as retinal 1. Photosensitive pigment in cone cells is of three types, namely porphyropsin, iodopsin and cyanopsin. Photopigment in cone cell is a conjugated protein made up of a protein and chromophore. Protein in cone pigment is called photopsin. Visual pathway or optic pathway is the nervous pathway that transmits impulses from retina visual center in cerebral cortex¹¹.

Visual pathway consists of six components:

1. Optic nerve
2. Optic chiasma
3. Optic tract
4. Lateral geniculate body.
5. Optic radiation
6. Visual cortex

PHYSIOLOGY OF VISION IN AYURVEDA

In Ayurveda physiology of vision is based on the functions of *Vata* and *Pitta*. Light (*Prakasha*) is having *Sookshma Guna*, due to *Sookshma Guna* of *Prakasha* it reach till the photo receptors in retina traversing various layers. *Chala Guna* of *Vata* is responsible for photochemical activity in retina. Electrons are in a state of motion due to *Chala Guna* of *Vata*. When light falls on electrons, their intensity of motions increases. Due to *Ushna Guna* of *Prakasha* and *Pitta* along with *Chala Guna* of *Vata* is responsible in altering



the cis form of retina in to trans form.

Dhatu are the structural and supporting units of the body. As retina is the structural unit that imparts the function of vision, so retina can be considered as a *Dhatu*. Retina can be correlated with all *Dhatu*, based on different functions, but directly in the visual process is compared with *Raktadhatu*.

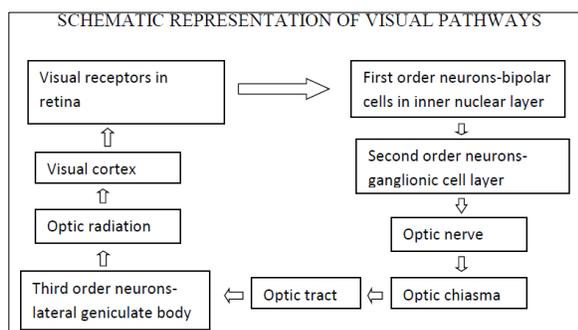


Figure 1 Schematic representation of visual pathways *Jeevanam* is the function of *Raktadhatu*. *Jeevanam* means sustenance of function or life¹². A structure can perform its function only in the presence of life. In retina the photo receptors are the primary cause for visual process. Loss of vision is due to destructions of these receptors, so they can be considered as *Raktadhatu*. Electric energy is having *Sookshma Guna* of *Vata*. Electricity can only flow in a unidirectional path like the flow of water from a tap. Like the movement of air it cannot move to any other direction instantly without any provocation. The electrical potential generated in the photo-receptors

flows through the *Srotas* are termed as *Roopavaha Dhamani*.

DISCUSSION

There are five types of *Pitta* namely *Ranjaka*, *Pachaka*, *Alochaka*, *Sadhaka*, *Brajaka*. The *Akshi* is visesha sthana of *Alochaka Pitta*. *Alochaka Pitta* is responsible for *rupagrahana*. In the modern pigment of retina i.e. rhodopsin and iodopsin can be closely correlated to *Alochaka Pitta* due to similarity in location and function of these components. Rhodopsin is formed in the layer of rods and is responsible for dark vision. Rods are particularly sensitive to dim light and they serve predominantly in detection motion. The nerve impulse is caused by decomposition of rhodopsin into two fractions i.e. opsin and retinine. Retinine is again retransformed into vitamin A and thus rhodopsin is regenerated. Cones contain iodopsin. Color vision and photopic vision i.e. light vision takes place in layer of cones. The pigment layer of retina contains melanin. This makes the eye a dark chamber and prevents internal reflection of light rays.

CONCLUSION

Alochaka Pitta is a subtype of *Pitta* which is responsible for sight and thinking process. *Alochaka Pitta* enables us to see things,



perceive and analyses them. *Drishti* or eyesight is the seat of *Alochaka Pitta*. *Drishti* means vision which enables us to see things around us and perceive them in the right sense. In the modern science, pigment of retina i.e. rhodopsin and iodopsin can be closely correlated to *Alochaka Pitta* due to similarity in location and function of these components. *Alochaka Pitta* interprets the visual stimuli of light and colour, converting electrical impulses into vision that can be understood and read by the brain. It processes and assimilates information. It has been argued that *Alochaka Pitta* governs internal as well as external vision. The functions, types of *Alochaka Pitta* and its modern correlation physiology of vision are described in this review article.



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