

Alochaka Pitta in the perspective of Modern Era

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Introduction:

Theory of *tridosha* is an inimitable theory in the indian system of medicine. *Pitta* in general does the bodily functions related to digestion and metabolism. All metabolic and catabolic activities, biochemical reactions, and the process of energy exchange are due to *pitta*. There is always involvement of *pitta dosha* in every reaction or changes take place inside our body. *Pitta dosha* is present at all levels of organizations, i.e., cellular level, single system level, and organization level.[1]

Pitta dosha does not move in the body individualistically. It is distributed all over the body with the help of *Vata dosha*. In modern physiology, it has been said that the basic theory of the body's control system allows the functional system to operate in support of one another. *Vata*, *Pitta*, and *Kapha* are body control systems and they regulate bodily functions in mutual coordination. *Pitta dosha* has been described into five types on the basis of location, namely *Paachak*, *Ranjak*, *Saadhak*, *Alochaka*, and *Bhrajaka pitta*. [2]

Alochaka pitta is present in the eye responsible for normal vision. On the basis of functional understanding, the photosensitive chemicals in the eye called photopigment and the whole chemical processes involved in the photochemistry of vision, neurotransmitters involved in the visual pathway from the retina to visual cortex may be denoted as *Alochaka pitta*. *Acharya Bhela* has classified *Alochaka pitta* into two types, i.e., *Chakshyu vaisheshika* & *Buddhi vaisheshika*. *Chakshyu vaisheshika* is for the perception of vision, whereas the function of *Buddhi vaisheshika* is to distinguish the things from each other, to compare with previous experience or to remember it for future use. [3]

Modern Aspects:

The retina is the light-sensitive portion of the eye containing rod and cone cells. Cones are responsible for color vision and rods can detect dim light and are mainly responsible for black and white vision and vision in the dark. Light and dark stimuli stimulate the cones or rods; signals are transmitted first through the successive layers of the retina and finally into optic nerve fibers and the visual area of the cerebral cortex. Both rod and cones contain chemicals that decompose on the exposure to light. In this process, it excites the nerve fiber leading from the eye. The light-sensitive chemical in the rod is called rhodopsin and the light-sensitive pigment in cones is called color pigments. Rhodopsin is the combination of protein scotopsin and the carotenoid pigment retinal. This retinal is a type of 11 cis-retinal. This cis form of a retinal bind with scotopsin to synthesize rhodopsin. Bathorhodopsin decays in a nano second to lumirhodopsin. This product is then decayed in microsecond to metarhodopsin-1 then about a millisecond to metarhodopsin-2 and finally into the complete split product of scotopsin and 11 cis retinal. Metarhodopsin-2 is the activated rhodopsin that excites electrical changes in the rods and the rods then transmit the visual image to the visual cortex in the form of the action potential.

Reformation of Rhodopsin:

Light-sensitive chemical is called as rhodopsin. This rhodopsin is formed in the absence of light and helps in night or dark vision. The first stage in the reformation of rhodopsin is to reconvert all trans retinal into 11 cis retinal. This process requires metabolic energy and is catalysed by the enzyme retinal isomerase. Once 11 cis retinal is formed it recombines with scotopsin to reform rhodopsin. There is a second chemical route by which all trans retinal can be converted into 11 cis retinal. First all

trans retinal is converted into all trans retinol which is a one form of vitamin A, then all trans retinol is converted into 11 cis retinol due to the enzyme isomerase. Finally, 11 cis retinol is converted into 11 cis retinal which combines with scotopsin to form rhodopsin. The pathway from photoreceptors (rods and cones) -retina-optic nerve-optic chaisma-dorsal lateral geniculate nucleus of the thalamus-geniculocalcarine tract to the primary visual cortex is called as an optic pathway. The communication in this pathway is carried out by neurotransmitters which may be represented as *Chakshyu vaisheshika pitta*.

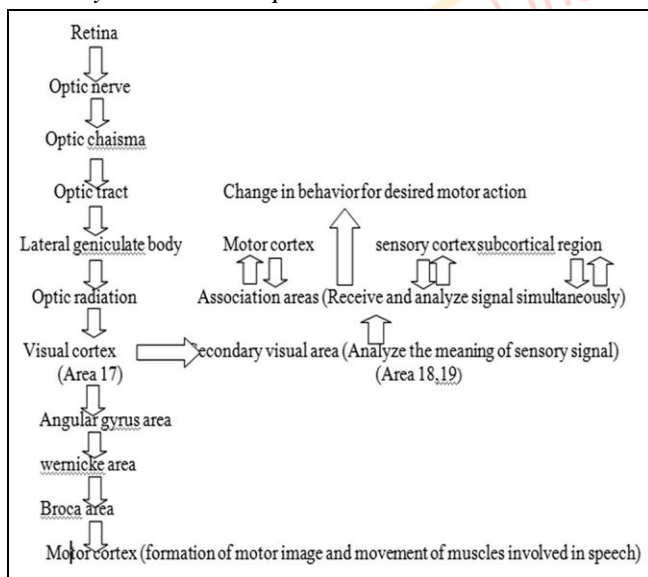
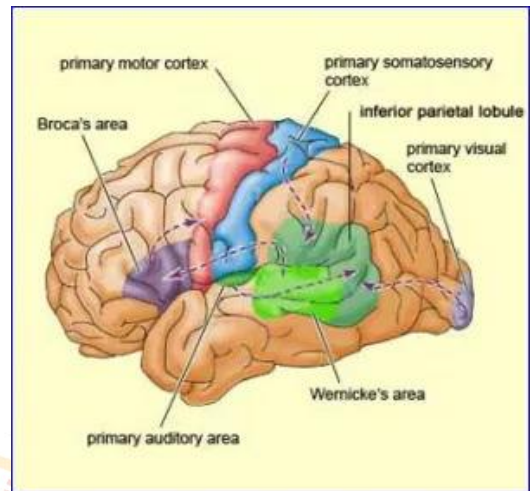


Figure 1: Pathway of *chakshyu vaisheshika* and *buddhi vashehsika* [4]

Buddhi vaisheshika pitta, a type of *Alochaka pitta*, provides knowledge regarding past experience and distinguish the things from each other to compare with previous experience. It also stores the information for future purpose. *Buddhi vaisheshika pitta* acts at the molecular level to communicate between the cortical and subcortical structure of the brain for which there is happening of differentiation, comparison, or memory of knowledge. *Buddhi visheshika pitta* performs its function even after the formation of *buddhi* and *smriti*. The lower brain center initiates the wakefulness in the cerebral cortex and open its bank of memory for the generation of *buddhi*. *Buddhi* and *smriti* are required for the high level of interpretative meaning of the sensory information.

The important association areas include

1. Parieto-occipito-temporal association areas provide a high level of interpretative meaning for signals from all the surrounding sensory areas. It has some functional subarea.
 - Analysis of spatial coordinates of the body-this area receives visual sensory information from the posterior occipital cortex and simultaneous somatosensory information from the anterior parietal cortex. From all this information, it computes the coordinates of the visual, auditory, and body surroundings
 - Wernicke area is important for language comprehension. It is the most important region of the entire brain for higher intellectual function
 - Angular gyrus area is needed for initial processing of visual language (reading). It is needed to make meaning out of the visually perceived words
 - Area for naming objects: the names are learned through the auditory input, whereas physical natures of the object are learned mainly through the visual input.
2. Prefrontal association area receives much prenasalized sensory information especially information from the spatial coordinates of the body through subcortical bundle of nerve fibers. The prefrontal association area is essential to carrying out thought process. It also stores working memories that are used to combine new

thoughts while they are entering the brain. That's why the prefrontal cortex is called as the locus of higher intellect in the human being

3. Limbic association area is concerned primarily with behavior, emotion, and motivation. It provides emotional drives for activating other areas of the brain and motivational drives for the process of learning itself.

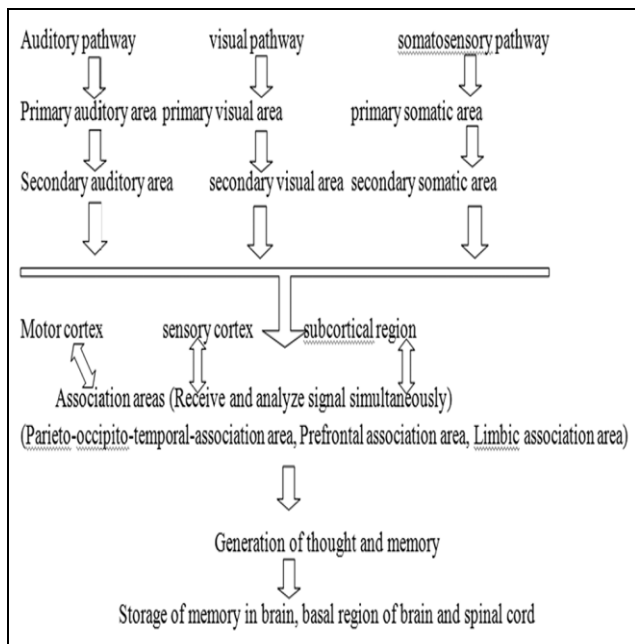


Figure 2: Generation of *buddhi* for the function of *buddhi vaisheshika pitta* [6]

Conclusion:

In this literary study, we collected various data from the *Ayurvedic* literature with the available commentaries, as well as the textbooks of modern medical sciences, various articles for better understanding of the concept of *Alochaka pitta* and its comparison with contemporary science. *Ayurveda* is a science based on functional understandings. In general, *pitta* is *drava* (liquid) in nature and involved in digestion, metabolism, biochemical reactions, chemical messengers at every level in the human body. It is due to its *teekshna*, *ushma*, and *sara* properties. *Alochaka pitta* is situated in *netra*. It is responsible for *roopalochana* (perception of vision). On the basis of functional understanding, the photosensitive chemicals in the eye called photopigment and the whole chemical processes involved in the photochemistry of vision, neurotransmitters involved in visual pathway from

the retina to the visual cortex may be represented as *Alochaka pitta*. There is a need of further research to evaluate in detail all other *doshas*.

References:

1. Moharana P, Roushan R. Ranjak pitta and its affiliates in modern perspective: A review. J Adv Sci Res 2019;10:124-30.
2. Moharana P, Roushan R. A critical review of pachaka pitta in modern physiological. Int J Res Ayurveda Pharm 2019;10:18-20.
3. Verma S, Yadav JR. Shareera Kriya Vigyana. Varanasi: Chaukhamba Orientalia; 2018. p. 100.
- 4) Moharana P, Roushan R. *Alochaka pitta* of ayurved and its affiliates in modern perspective. Indian J Ayurveda Integr Med 2022;3:5-11 p8.
- 5) <https://psychology-info.com/areas-brain> involved-visual-function website accessed at 18.11.2022 11.00 AM IST
- 6) Moharana P, Roushan R. *Alochaka pitta* of ayurved and its affiliates in modern perspective. Indian J Ayurveda Integr Med 2022;3:5-11 p9.