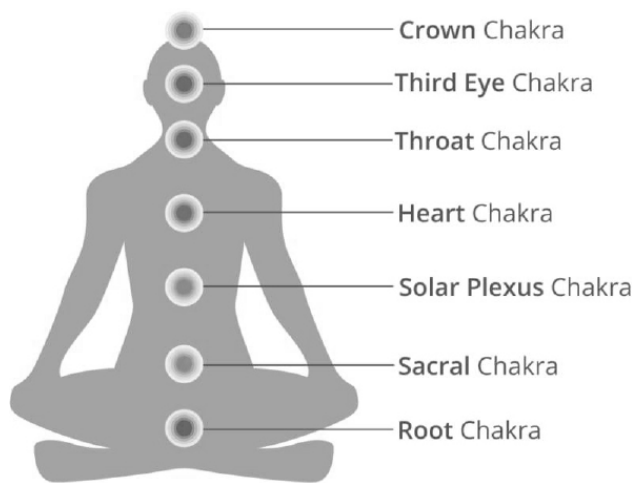


# Pineal gland where Western science meets Eastern science; open for debate

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The concept of soul became a topic of debate in western science when Cartesian neuro-psychophysiological doctrine was laid in the 17<sup>th</sup> century. Greek physician Hippocrates said that the soul resides somewhere inside the body. He also justified the brain as the focal point of feeling and reason. According to these, there was an idea that the energy-generating portion which coordinates the molecular, hormonal, physiological, and chemical scenarios in our body has to play an important part in the concept of “Soul”. Modern neuroscience believes, the rhythmic coordination of the human body is maintained by the suprachiasmatic nucleus, via the pineal gland, thus comes the belief that the pineal gland has an association between mystical & energetic aspects.

Later, the scientific philosopher Rene Descartes (1596 - 1650 AD) and Andreas Vesalius (1514 - 1564 AD), the father of modern anatomy, also put forward the brain as the center of the soul. Rene Descartes in his book, ‘The Treatise on The Passion of Soul’ described the pineal gland as the meeting place of the physical and spiritual worlds and wrote that, “The body and spirit not only meet there, but each affects the other and the repercussion extends in both directions.” Further, studies led by Giovanni Battista Morgagni, the father of modern anatomical pathology observing autopsies of three patients with mental derangement, delirium and an intelligent boy with convulsions, reported pineal abnormalities like soft pineal, rosy hued pineal and enlarged

pineal respectively<sup>1</sup>.

Special type of cells called pinealocytes of pineal gland produces serotonin (precursor of melatonin) with the exposure to the sun and later produces melatonin due to the exposure to the moon (darkness), which are involved in circadian rhythm, sexual development, antioxidant defense responses, neuroprotective effects, anti-amyloid effects and anti-apoptotic activity.

According to the Eastern mystical concepts, the pineal gland along with other endocrine glands are called “chakras”. It explains the activation of the third eye chakra (Ajna chakra), gives rise to psychic awareness and enlightenment along with the ability to have glimpses of the past, present and future under the psychic concept of “Deja vu”. Dimethyl tryptamine (melatonin) produced from the pineal gland is also known as spirit molecule. It has wide pharmacological uses such as anticancer and anti-aging properties. Studies on birds show that the pineal gland is a magnetoreceptor and a navigation centre. These researches showed that the electromagnetic fields (EMF) suppress the activity of the pineal gland with a reduction of melatonin production. Excessive exposure to EMFs (e.g., mobile phones and other electronic gadgets) disrupts the human body’s circadian rhythm<sup>2</sup>.

Anatomically, as the pineal gland is near the sensory and emotional centers of the brain, it is linked to extrasensory abilities such as intuition, discernment, psychic awareness and expanded mind capacity. Recent neuroscientific findings has shown that the functionality of the pineal gland of humans can be activated through yoga and meditation<sup>3</sup>. According to Western medicine, lower melatonin levels were found in Alzheimer’s disease, schizophrenia, multiple sclerosis with major depression, primary obsessive compulsive disorder, Meniere’s disease, fibromyalgia, migraine, endometrial cancer, non-small cell lung cancers, acute intermittent porphyria, and type 2 diabetes mellitus.

The association between melatonin and meditation was first explored in 1995 by researchers at the University of Massachusetts Medical Center’s Stress Reduction and Relaxation Program. As melatonin is produced mainly at night, overnight urine samples were collected and tested for 6-sulphatoxymelatonin, a melatonin breakdown product thought to be an accurate reflection of blood melatonin levels<sup>4</sup>. Researchers found that women who meditated had significantly higher levels of melatonin. Another study revealed that meditation before bedtime increased melatonin levels for that night. No significant increase in blood melatonin levels were noted on nights where participants didn’t meditate.

Though small in size, the pineal gland seems to harbour many secrets, still not clearly understood. In summary science is around us, yet to be discovered for the best of every one!

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