



RESPIRATORY PHYSIOLOGY: AYURVEDIC REVIEW

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ABSTRACT

Respiration is an essential physiological process of body. It is very necessary for the metabolism and other functional activity of body. *Acharya Sharngdhara* has described the respiration process in a very scientific way. Concept of *Pranavayu*, and *Pranvaha Srotasa* mentioned in other major texts are helpful to better understand the respiration mechanism.

KEYWORDS: Prana Vayu, Pranavaha Srotasa, Respiration.

INTRODUCTION

Breathing is a normal phenomenon of any living existence. When it is term as respiration it becomes little bit more complicated process. Respiration is very essential physiological process in any living body. As till today modern science has revealed many of minute process involved in respiratory physiology but *Ayurveda* perspectives of respiration (*Shwasana kriya*) are yet to be understood. Various ancestors of *Ayurveda* has described various concepts and terms involved in respiration (*Shwasana Kriya*) in which some of them have similar views while some dis- similarities is also seen. In this article it is attempted to make some fruitful justification regarding the respiration physiology mentioned in different *Ayurvedic* texts.

Aims and objective

- To understand the respiration physiology as per *Ayurvedic* aspects.

Prana Vayu

Prana Vayu is a type of *Vata Dosha*, which helps in process of respiration. *Acharya Charaka* has described *Moordha*, *Kantha*, *Jihwa*, *Asya* and *Nasika* as its places (*Sthana*).^[1] *Acharya Vagbhata*^[2] added *Urah Pradesh* (thoracic region) also as the *Sthana* of *Prana Vayu*, while *Sharngadhra*^[3] stated *Hridaya* as its *Sthana*. So collectively all the places (*Sthana*) denote the Respiratory system.

Pranvaha srotasa

Generally respiration is a physiological process in which oxygenated air is inhaled and deoxygenated air is exhaled respectively termed as inspiration (*Niswasa*) and

expiration (*Uchawasa*). In modern science there is description of respiratory system (including all the organs and structures) for all the process of inspiration and expiration. In *Ayurveda Pranvaha Srotas* carries all the anatomical and physiological involvement during respiration or *swashana* Prakirya. According to *Acharya Charaka Moola* of *Pranvaha Srotasa* are *Hridaya* and *Mahasrotas*^[4] (elementary canal), while *Sushruta* has some different view regarding the *Moola* of *Pranvaha Srotasa*, *Hridaya* and *Rasavahini Dhamaniya*.^[5] Here both the *Acharyas* have similar opinion over *Hridaya* as *Moola* of *Pranvaha Srotasa*, possibly due to its function to circulate blood (*Rakta*) to all body. As by circulation all the essential nutrients are distributed to each cell of the body it is considered as *Moola* of *Pranvaha Srotasa*. Now why *Charaka* stated *Mahasrotasa* as *Moola* of *Pranvaha Srotasa*, possible answer may be as he has described *Anna* as *Prana*^[6] and essence of *Anna* after assimilation, is carried into the Heart and then from Heart circulate to whole body so he considered *Mahasrotasa* as *Moola* of *Pranvaha Srotasa*. So *Sushruta* considered *Rasavahi dhamni's* as another *Moola* of *Pranvaha Srotasa* because *Rasavahi Dhamni's* circulate the *Rasa* which is having the very essential and nutritional part of *Anna*, the *Ahara Rasa*.

Mechanism of respiration

Acharaya Sharangdhara was first to elaborate the proper mechanism of respiration. He described this process in such a poetic and scientific way. He described that *Prana Pawan (Vayu)* from naval region after touching *Hritkamala* passes out through *Kantha Pradesh* and after drinking *Vishmupadamrit* comes back quickly to provide *Prinran*, *Jeevanam* and to stimulate *Jatahargni*.^[7] This

description of *Sharangdhar* is very precise and explains the respiration in very scientific way.

If we look over modern respiratory physiology it is very much similar to the physiology described by *Sharangdhara*. Naval is considered as the base point from where the respiration starts if we see it as the foetal life umbilical cord play an important role in respiration and nutrition of the fetus so it is very comprehensive and scientific approach of *Shrangdhar's* description regarding respiration. Apart of it, in human body abdominal muscles and diaphragm may also be considered for the term "naval" used by *Sharangdhar*, as these structures helps in respiration.

Sharangdhara has mentioned "*Sprishtva Hritkamalntaran*" which simply means the gaseous exchange during respiration. Air is inhaled and it travels through trachea reaches to the lung where gaseous exchange occurs through minute blood vessels, oxygen is taken up and CO₂ is released, which is exhaled out. Oxygenated blood is supplied to each organ and tissue by regular pumping of heart. This process continuously goes on and all the functions of *Prana Vayu* are carried out.

CONCLUSION

- Respiration mentioned in Ayurveda is much scientific and yet to be explored more.
- Concept of *Prana Vayua* and *Pranvaha Srotasa* can be helpful to understand Pathology of various cardio-respiratory disease.

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