

UNDERSTANDING THE CONCEPT-‘SAMAYOGVAHI’ WITH THE HELP OF HOMEOSTATIC FEEDBACK MECHANISM

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ABSTRACT

Aim of formulating this science of Ayurveda is to constantly maintain body constituents in homeostatic conditions. *Sharir* is a name given to a body composed of *Panchamahabhuta* in which life abides. Living body comprises of various structures produced by *Panchamahabhuta*, which not only tend to stay together but also maintain coordination with each other to keep constant internal environment. The term *Samyogvahi* is very important in the definition of *Sharir*. It denotes the homeostasis of constituents. The combination of the *dhatu*s in proper manner is known as *Samayogvahi*. *Samyogvahi* means observation of coordination between different body constituents. Appropriate to and fro circulation is to be incurred for homeostasis of internal tissues. Coordination of body entities is possible if they are connected to each other through proper channels. If this homeostasis is not maintained there is either decrease or increase of body constituents which is described as ‘*Visham Melaka*’ by Acharya Charaka. Such condition gives rise to difficult to manage type disease which is described as ‘*Asamayogvahi*’ condition may be life threatening as disease progresses. ‘Homeostasis’ refers to the maintenance of constant internal environment of the body. The importance of internal environment was notified by great biologists of 19th Century Claude Bernard. He enlightened the fact that multicellular organism including man live in a perfectly organized and controlled internal environment which he called ‘*Milieu Interieur*’. The word

‘Homeostasis’ was introduced by Harvard Professor, Walter B cannon in 1930.

Key words: *Samayogvahi, Visham Melaka, Homeostasis, Milieu interieur*

INTRODUCTION

The basic concepts of *kriya Sharir* are based on the theory of *Tridoshas* viz. *Vata, Pitta and Kapha, Saptadhatu and mala*. *Kriyasharir* deals with understanding the simple and efficient mechanism of body such as health (*Swasthya*) and the parameters to know the health status in a detailed manner. *Ayurveda* is the science of life, gives prime importance to *swasthya* (health) of individual. The definition of *swasthya* is maintaining the

equilibrium of *dosha-dhatu-agni-mala* and having an enthusiastic or happy *manas-indriya-atma*. Such individual is called as *swasthavyakti* (healthy individual). *Tridosh* is the functional representative of *Panchamahabhuta* and capacity to vitiate the *dhatu* and *mala*. *Tridosha* are also known as *dhatu* as they support the body in its normal states. The term *dhatu*s means a constituent, an essential element, primary substance, the

supporter, etc. Roots are important for plants. Origin, growth, sustenance and death of plants are dependent on roots. Similarly origin, growth, sustenance and death of human body are dependent on *dosha, dhatu and mala*.

MATERIAL AND METHOD

All classical texts available in the library of *Ayurved* College, hadapsar, Pune had been reviewed. Database available after net surfing was also reviewed.

Concept of Sharir and Samyogvahi

Sharir is the seat of soul—*Chetana* comprises of an equilibrium combination of *Samayogvahi* of the modifications of the five gross elements—*Panchamabhutavikara*.¹ The term *Samyogvahi* is very important of *Sharir*. It denotes the homeostasis of the body. The combination of the *dhatu*s in proper manner is known as *Samayogvahi*. *Samyogvahi* means observation of coordination between different body constituents. Appropriate to and fro circulation is to be incurred for homeostasis of internal tissues. Coordination of body entities is possible if they are connected to each other through proper channels.² They have to be maintained in physiological quantity such combination keeps the body free from diseases. If this homeostasis is not maintained there is either decrease or increase of body constituents which is described as '*Visham Melaka*' by Acharya Charaka. Such condition gives rise to difficult to manage type disease which is described as '*Asamayogvahi*' condition may be life threatening as disease progresses. So the coordination of variety of *dosha, dhatu, mala* is very important to maintain the internal environment constant.

Importance of Guna of dosha, dhatu and mala

The characteristic by which one gets attracted or invited towards an object is called as *Guna*.

Guna is inherent with *dravya*. *Guna* possesses inseparable concomitance i.e. *Sama-vaysambandh* with *dravya*.³ *Guna* of *dosha, dhatu* and *mala* are the acting tools for carrying various bodily functions and maintaining them in balanced stage. For e.g. If *rukshaguna* of *Vata* is increased, to manage it physician has to prescribe *Snigdha* *guna* medicine and food. If more night awakening happens, it will increase *rukshaguna* in the body and it is managed by sleeping in day time to subside the *rukshaguna* by increasing *snigdha* *guna*. It is nothing but an attempt to maintain the internal environment constant which is described by '*Samyogvahi*' by Acharya Charak and can be fairly co-related with '*Milieu Interieur*' concept of great biologist Lord Barnard.

Ashray –Ashrayee Bhava in the Sharir to maintain Samayogvahi

The seven *dhatu*s are the seats of *doshas*. Therefore they are *Ashrayas* and the *tridosha* are the *Ashrayee*. Generally, the increase of the *Ashrayas* will lead to the increase of *Ashrayees* and decrease of *Ashrayas* to decrease of *Ashrayees*. *Laghuguna* of *Vata* balances *Guru guna* of *kapha*. *Ushnaguna* of *Pitta* balances *Sheeta-guna* of *Kapha*. Increasing the decreased entity and decreasing the increased entity is principle aim of *Ayurveda*.

Exception for Ashray- Ashrayee rule

This rule does not apply to *Vata* and its *Asraya Asthi*. The increase of *Vata* leads to the decrease of *Asthi* and decrease of *Vata* to increase of *Asthi*.

Ashrayee Bhava (Panchbhautik Constitution)	Ashraya Bhava (Panchbhautik Constitution)
<i>Vata - Vayu + Akash</i>	<i>Asthi - Pritvi + Vayu</i>
<i>Pitta- Agni</i>	<i>Rasa – Aap</i> <i>Rakta – Tej + Aap</i> <i>Sweda- Aap</i> <i>Lasika- Aap.</i>
<i>Kapha-Prithvi + Aap</i>	<i>Rasa- Aap</i> <i>Mamsa- Prithvi</i> <i>Meda- Aap + Prithvi</i> <i>Majja – Aap Shukra - Aap</i> <i>Mutra- Aap + Agni</i> <i>Purisha - Agni + Vayu + Prithvi⁴</i>

Concept of Homeostasis

'Homeostasis' refers to the maintenance of constant internal environment of the body. The importance of internal environment was notified by great biologists of 19th Claude Bernard. The normal healthy living of organisms including human beings depends upon the constant maintenance of internal environment within physiological limits. If the internal environment deviates beyond the set limits, the body suffers from malfunction or dysfunction. Therefore, the ultimate goal of an organism is to have a normal healthy living, which is achieved by the maintenance of internal environment within set limits. For functioning of homeostatic mechanism, the body must recognize the deviation of any physiological activity from the normal limits. Body is provided with appropriate receptors and sensors, which recognize the deviation. These detectors sense the deviation and alert the integrating Centre. The integrating center immediately sends the information to the concerned effectors either to accelerate or inhibit the activity so that normalcy is stored.⁵

The Feedback mechanism is carried out by

- 1) Negative feedback Mechanism
- 2) Positive feedback Mechanism

1) Negative feedback Mechanism Negative

feedback is the one which the system reacts in such way as to arrest the change or reverse the direction to change. After receiving message, the effectors send negative signals back to the system. Now, the system stabilizes its own function and makes an attempt to maintain homeostasis. Many homeostatic mechanisms in the body function through negative feedback. For example, thyroid stimulating hormone (TSH) released from pituitary gland stimulates thyroid gland to secrete thyroxin. TSH is controlled by thyrotrophic releasing hormone (TRH) from hypothalamus. This hormone is secreted by the nerve endings in the median eminence of thalamus. TRH travels across median eminence to anterior pituitary gland via hypophyseal portal system where it stimulates the release of thyroid stimulating hormone from cells called thyrotropes. TSH stimulates thyroid to release the thyroid hormone. When thyroxin level increases in the blood, it inhibits the secretion of thyroxin from thyroid gland decreases. On the other hand, if thyroxin secretion is less, its low blood level stimulates thyroid gland to secrete thyroxin.

2) Positive feedback Mechanism: The action of the homeostatic mechanism by supporting and accelerating the deviation or change is

known as positive feedback mechanism. The functions controlled by positive feedback mechanism are less than those controlled by negative feedback mechanism. One of the Positive feedbacks Mechanism occurs during the process of coagulation of blood. Blood coagulation is important for the arrest of bleeding during injury. There are three important stages of blood coagulation namely i) formation of prothrombin activator ii) conversion of prothrombin into thrombin. ii) Conversion of fibrinogen into fibrin by thrombin. In addition to converting fibrinogen into fibrin, thrombin increases the formation of prothrombin activator. This causes formation of more and more amount of prothrombin activator so that the process of coagulation is accelerated and blood loss is prevented quickly. Positive feedback mechanism occurs in milk ejection reflex also.

DISCUSSION

Samyogvahi Vs Homeostasis

Acharya Sushruta explains that the person who has decrease of *doshas*, *dhatu*s and *malas* or even *bala* develops desire for food and drinks which make for their increase. The person debilitated because of lack of food after getting the food he gets over that debility.⁶ This is very good example furnished by Acharya Sushruta. The homeostatic system in the body acts through self-regulatory devices which can be correlated with functions of *Vata*. The seat of *Vata* being *Mastiska* and *Vatavahnadis*, the phenomenon of *vata* can be assumed as the phenomenon of nerve impulse. The most important qualities of *Vata* are in corporality (*Amurta*), instability (*Anavasthitatva*), Self originated (*Swayambhu*), Minute (*Sukshma*) which takes part in the feedback mechanism to bring the internal environment of body at normal level. Detectors or sensors recognize

the deviation from the normal functions. If such deviation is different from *Samyogvahi* then such deviation is conveyed to *Mastishka* via *Vatavahanadis*. This message of change in deviation is transmitted to control centers. Motor response is given by control centers to the effectors. i.e. *dhatu* and *mala* to change from the '*Asamayogvahi*' condition to '*Samayogvahi*' condition. Thus homeostasis is maintained. The qualities of *Vata* which are Capable of maintaining homeostasis are *Sarvendriyanamudyojaka*, *Sarvendriyarthanam* *Abhivodha*, *Sarvsharirdhatuvyuvkara*, *Sandhankarasharirasya*. The following functions are carried out with help of *Yogvahiguna* of *Vata*.

CONCLUSION

1. The concept of the term '*Milieu Interieur*' has been well before explained in ancient *Ayurved* compendia with the term '*Samyogvahi*' in *Charak Samhita* in BC 2nd century.
2. The *Ashraya- Ashrayee bhava* of *Vata* and *Asthi* is an example of negative feedback mechanism.
3. The *Ashraya- Ashrayee bhava* of *Pitta* and *Kapha* with their respective *Ashraya* are the examples of Positive feedback mechanism.

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