ORIGINAL RESEARCH PAPER

Ayurveda

EVALUATION OF CELL BIOLOGY IN AYURVEDA

KEY WORDS: Srota, tridosa, cell structure, cellular functions.

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ABSTRACT

Ayurveda has elaborately described about Anatomy, Physiology and Functions of Srotas in human body. Cellular biology includes study of cell metabolism , cell communication, cell cycle and cell composition .In Biomedical Science , research on cell functions is essential to treat cancer and other diseases. Whole human body is composed of srotas and without involvement of Tridosha and srotas , diseases can not occur on human body. According to treatises , study of cell biology greatly includes involvement of srotas and tridosha along with it can be helpful while treating various diseases.

INTRODUCTION

Srotas mean channels in the form of tracts, veins, arteries etc. which are also called as "*kha*" ie.

empty spaces. Srotas carry and transport food, dhatus, dosas and malas. The word "srota" is derived from "*sru*" means oozing. The oozing of nourishing fluid and return of waste products takes place through srotas [1] In fact, the whole body is composed of srotas and it can be studied under cellular biology.

AIMS AND OBJECTIVES

1. To study about anatomy of srotas in detail.
2. To study about cellular components and Tridosha.
3. To study about cellular apoptosis through "*Swabhavoparam* " theory [12].

MATERIALS AND METHODS

Based on Literary review, the conceptual study on srotas and cell biology has been done by taking references from Classical and Modern treatises. The study on Vrihattrayee and Physiology emphasises the relationship among cell structure, cell components , cellular functions with anatomy and physiology of Srotas in detail.

MORPHOLOGICAL ANALYSIS

Observing the cellular histology it is find that there are different categories of cell. There are various shapes of cell ,eg. Polygonal, spherical, bipolar, multipolar, elongated [2] Camillo Golgi divided Neurons roughly into two basic morphological categories, these are Type 1 cells are with long axons used for moving signals over long distances. Type 2 cells are with short axons. Neurons having cellular extensions with branches called as Dendritic tree. [3]

In Ayurveda, various shapes and sizes of Srotas are mentioned. The shape of srotas may be *Vritta* (Spherical), *Sthula* (huge), *Anu* (smaller), *Dirgha* (elongated), *Pratana sadricha* (like the branches of tree ie. Dendritic tree) [4] .Along with this, it is mentioned that colours of Srota (cell) and Dhatu (tissue) are same as Physiology also says that the tissue which is made of different cells having identical colours [4] . As like innumerable Srotas , cells are also called to be uncountable .[5]

PHYSIOLOGICAL ANALYSIS

According to Ayurveda, physiology and pathology of human body is depend upon status of tridosha which reside within Srotas. Physiological functions of cell organelles are exactly the actions of Tridoshas. Among three doshas, Vata is responsible for various impulses , movements or transportation of nutrients, waste products etc., contraction and expansion of voluntary and involuntary muscles. It also controls mind and sense organs in terms of receiving different impulses. It initiates swallowing process , controls peristalsis and responsible for spitting, sneezing , eructation etc. Vata maintains speech, memory and intellectual activities. It is also responsible for growth of embryo, delivery of fetus, ejaculation of sperm and mensturation [6] .Ayurveda describes *Paramanu* as the smallest unit of body ie. Cell. *Samyoga* (communication, adhesion) and *Vibhaga* (division) of paramanu is caused by Vata dosha [7] .

Pitta is responsible to maintain cellular activities related to digestion (*paka*), tissue metabolism (*prapaka*) ,energy production (*parinama*), body temperature (*ushma*) , body complexion (*prabha*) , happiness (*harsha*) , ego(*abhiman*) , self satisfaction (*prasannata*) and intellectual capability (*medha*) .

Kapha maintains the bonding or adhesion (*vandha*) and compactness (*sthirattva*) among cells. As like intracellular fluid and extracellular fluid, It is responsible for immunity, fertility, skin condition and protects inner layers of alimentary tract, blood vessels and reproductive tracts from injury [9] .

CELLULAR FUNCTIONS AND TRIDOSHA

Vata is called *Pravartaka chestanam* as it initiates the transport of substances through cell membrane by diffusion and active transport mechanism. Gaseous exchange of oxygen and carbon di oxide is done by vata dosha termed as inspiration and expiration. Active transport of sodium and potassium ions to create nerve impulse, peristalsis and rhythmic movements of muscles are governed by Vata dosha [10] .

Pitta emphasises the energy in terms of temperature, proteins, enzymes, hormones, various pigments etc. Lysosomes contain hydrolytic enzymes and Peroxidase contain oxidase enzymes and these organelles are responsible for cellular digestion or metabolism ie. *Paka* and *Prapaka* . Pitta is responsible for *Darshanam-adarshanam* as rhodopsin and photopsin pigments are found in retina for vision [11].

Kapha acts as *snehana* (nutrition), *bandhana*(adhesion) , *sthirattwa* (compactness), *gaurava* (build) , *vrishata* (sexual capability) and *balam* (immunity) [9] .

SWABHAVOPARAMVADA AND APOPTOSIS:

Cells are capable of living, growing and performing their special function as long as the proper concentration of constituents are available. "*Swabhaba*" means Natural and "*Uparama"* means Destruction. It opines that an object arises from a specific cause but destroyed naturally [12]. In body, when cells are no longer needed then they undergo a suicidal programmed cell death called Apoptosis [13] .

CONCLUSION

Cell is anatomical and functional unit of body. In terms of

Srotas, anatomy of cell is described. In terms of Tridosa, functions of organelles are mentioned for example transport mechanism, nourishment of tissue, building up tissue, enzyme regulation, tissue morphology etc. Tridosa reside within srotas and human physiology is maintained by Tridosa. For treatment purposes, experimental work on cell biology and *Srotadusti* should be encouraged for future use.

REFERENCES

[1] Shastri Rajeshwardutta Edited Charak Samhita of Agnivesh Reprinted 2015 Viman sthan 5th chapter Srotavimanaadhyaya 9th sloka page no 712 Chaukhambha Bharati Academy.
[2] Guyton and Hall Textbook of Medical Physiology 11th Edition ISBN: 978-81-8147-920-4 chapter 1,2 Elsevier Publication.
[3] Sujit K Choudhuri Concise Medical Physiology 6th Edition ISBN: 81-7381-139-3 Chapter XA2 "Neurons and Neuroglia" New Central Book Agency Pvt. Ltd.
[4] Shastri Rajeshwardutta Edited Charak Samhita of Agnivesh Reprinted 2015 Viman sthan 5th chapter Srotavimanaadhyaya 25th sloka page no 714 Chaukhambha Bharati Academy.
[5] Shastri Rajeshwardutta Edited Charak Samhita of Agnivesh Reprinted 2015 Viman sthan 5th chapter Srotavimanaadhyaya 5th sloka page no 709 Chaukhambha Bharati Academy.
[6] Shastri Rajeshwardutta Edited Charak Samhita of Agnivesh Reprinted 2015 Sutra sthan 18th chapter Trisothiyaadhyaya 49th sloka page no 384 Chaukhambha Bharati Academy.
[7] Shastri Rajeshwardutta Edited Charak Samhita of Agnivesh Reprinted 2015 Sharir sthan 7th chapter Sharirsankhyashariradhyaya 17th sloka page no 917 Chaukhambha Bharati Academy.
[8] Shastri Rajeshwardutta Edited Charak Samhita of Agnivesh Reprinted 2015 Sutra sthan 18th chapter Trisothiyaadhyaya 50th sloka page no 384 Chaukhambha Bharati Academy.
[9] Shastri Rajeshwardutta Edited Charak Samhita of Agnivesh Reprinted 2015 Sutra sthan 18th chapter Trisothiyaadhyaya 51th sloka page no 385 Chaukhambha Bharati Academy.
[10] Shastri Rajeshwardutta Edited Charak Samhita of Agnivesh Reprinted 2015 Sutra sthan 12th chapter Vatakalakaliyaadhyaya 8th sloka page no 246 Chaukhambha Bharati Academy.
[11] Shastri Rajeshwardutta Edited Charak Samhita of Agnivesh Reprinted 2015 Sutra sthan 12th chapter Vatakalakaliyaadhyaya 11th sloka page no 251 Chaukhambha Bharati Academy.
[12] Shastri Rajeshwardutta Edited Charak Samhita of Agnivesh Reprinted 2015 Sutra sthan 16th chapter Chikitsapravritiyaadhyaya 27th sloka page no 323 Chaukhambha Bharati Academy.
[13] Guyton and Hall Textbook of Medical Physiology 11th Edition ISBN: 978-81-8147-920-4 chapter 3 Elsevier Publication.