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DHATWAGNI VYAPARA IN CARCINOGENISIS

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ABSTRACT: *Dosha Dhatu Sammurchana is the basis of all pathogenisis. The state of Agni also should be considered in the pathogenisis. This will explain the disease at the cellular level in the parlances of Ayurveda. In cancer, enormous research is going on to understand the molecular and cellular level of Carcinogenisis, to formulate a cure for this disease. In Ayurveda with the help of various explanations can be made in the context of cancer. An effort is made in this paper in this regard which will definitely carve new ways in the field of cancer research.*

INTRODUCTION

Protein synthesis is the basis of tissue building. It is controlled by the DNA and RNAS in the nucleus who transform the genetically stored code to the cytoplasm to form the proteins. The enzymes are catalysts of proteins synthesis and are proteins by structure. They help to the various proteins to be building up from the available nutrition in the cell. Mutation is change in DNA, RNA pattern, which will be found in carcinogenesis due to the effect of carcinogen. This will transmit altered code to cytoplasm and thereby forms altered proteins which change the cell structure and functions.

Dhatu Poshana is considered to be metabolism of various tissues. So the proteins synthesis and enzymatic actions can be attributed to the Dhatu Poshana and Dhatwagni vyapara. Dwarakanath et al[1] worked enormously over it and proved that the enzymes are equivalent to that of Dhatwagnis. So if the further comparison should be carried out, it is necessary to understand the Dhatwagnis in details. So with the help of the metaphysical explanation of Agnis according to Nyaya Visheshika School of philosophy[2], the various states of Agni and Dhatwagnis are understandable. The stat of Agni is root cause of altered Dhatu poshna, resulting in the formation of altered properties in the formed Dhatu, which is cancer. In the foregoing a detailed discussion with few conclusions are place before.

Discussion

In this present discussion, the structure and functions of DNA RNAS and enzymes are considered and then physiological and pathological states are considered with special references to concinogenisis, and compared with Dhatwagni vyapara.

1. **DNA :** Dioxy Ribo nueclic Acid is the chemical basis of life which got four neucleotides, namely Adenine, guanine, Thiamine and cytosine. As per Krik and Watsons' formula. They are arranged in certain fashion. These are codons and their array in gene.

Functions : It has got woe-fold functions : (A) Transcriptions (B) Replication. By transcription the formation of protein molecules is done and by replication the information of inheritance is supplied to daughter cells.

2. **RNA :** Ribo Nucleic Acids : are involved in the protein synthesis. They will transmit the message of gene to the cytoplasm where proteins building is done. Among them m-RNAs do the role of templates for protein synthesis, r RNA plays structural role and t-RNA works as adopter molecule.

3. **Enzymes :**Enzymes are proteins in nature and acts as catalysts in numerous reactions take place in metabolism. Each enzyme consists of Apo enzyme and coenzyme. Eo enzyme is heat stable, Low *molecular weight non organic molecule.* It is also called as '*prosthetic group*' if it bounds the apo enzyme with the covalent bond.

   Over 25% of all enzymes contain tightly bounded metal Ions in the co enzyme segment (prosthetic group). They are considered as super acids and accelerate the chemical reaction. The known metal ions are mg^{2+} mn^{2+} Ca^{2+} and k^{+}.

4. **Amino acids:** Twenty distinct amino acids are required for the synthesis of cellular complements of proteins. Each Amino acid, a separate codan is formed in mRNA by grouping three of the four Nucleotids. These codons in mRNA are synthesized as Amino Acids by chain of reactions, where numbers of enzymes are required.

Pathology

In certain conditions DNAs show changes in their pattern and thereby affects the total cell metabolism.

A. Mutations: Mutations are changes in neuoltide sequence of a gene which will take place normally once in every 106 cell divisions. The other factors causing the mutations are viruses, chemicals. Ultraviolet light and ionizing radiations. The above factors causes altered information's so that the offspring of the cell will show altered activity, their effect will either detectable one or non-detectable.

B. In the structure of DNA the phosphoric acid groups are arranged along the double helix of molecule and carry negative charge and are important in deciding the functions of DNA.

C. Thus due to mutations the protein synthesis of the cell is effected and altered proteins are formed, like wise the enzymes' structure, activity and its catalytic efficiency will be altered and in the place of synthesis of specific proteins allostric regulations will take place and the amino acids will be converted to amphibolic intermediates, i.e., converted into abnormal proteins, fats and carbohydrates etc.

In concinogencesis also mutations occur and the altered synthesis of protein and other metabolites will take place.

Thus in growing tumor cells various biochemical changes found are in accordance to the above mentioned fact; that there will be increased activity of DNA and RNA, synthesis of *foetal* proteins, inappropriate synthesis of certain growth factors and synthesis of new antigen etc.

In Ayurvedic parlances the intermediate metabolism is compared to that of Dhatwagni Yvapara in which 7 (seven) types of dhatu (tissues) will be formed, these reactions and synthesis of dhatus are carried out by seven types of dhatwagnis[3].

Dwarakanath *et al* (1953) proved that the dhatwagnis are well understood if compared to that of enzymes[4]. The dhatus are of two types namely 'Sthayi and Poshaka'. The poshaka dhatu is the substrate available for the dhatwagnis and get converted into sthayidhatu[5].

The sapthagnis are the moieties of Jatharagni and situated throughout the body. These are enriched by the Jatharagni[6].

By the above, discussion it can be emphasized that the protein synthesis is dhatu utpatti in which the enzymes together with DNA and RNA complexes are dhatwagnis and the poshaka dhatu is the substrate available in cytoplasm. (Table .1)

Therefore in cancer due to mutations the alteration in sequence of DNA & RNA there by altered activity of enzymes are attributable to the pathological conditions of the dhatwagnis. If this is explored the carcinogenesis (Samiprapti) will be understood.

Dhatwagnis are moities[7] of agni and to understand them it is required to go through various schools of thoughts like 'Nyaya' and 'Visheshka'. According to nyaya the agni is derived from 'Thejomahabhuta'. It is of two types (1) Karyarupa (2) Vishayarupa[8]. Karyarupa tejas also is of two types 'Shariram' and 'Indriyam'. The vishayarupa thejas is of 4 types (1) Bhowma (2) Divya (3) Audarya and (4) Akarja. The audharaya thejas is that which is present in the human body in the form of pitta and trayodashagnis. The akaratejas is present – in various metals like gold copper etc[9].

The agni is understood in various states i.e, the manda, thikshna, sama and Vishama. These states of agni effects the different reaction and form different end products[10]. The example of this is four (4) states of Jataragni in which the different types of ahara pachana takes place[11]. So the state of agni is very much important to decide the pakah. In dhatwagnis also the teekshnatwam and mandatwam is described by vaghbatta[12]. He state that the dhatu vridhi (increase) occurs when its agni becomes manda and the dhatu kshaym (decrease) takes place if the agni is teekshana and in sama condition the proper metabolism goes on[13].

But the state of Vishamatwam of dhatwagnis are not quoted by any author. But it can be emphasized here in the light to cellular level metabolism and carcinogenesis, that the Vishama Avastha of a dhatwagni is comparable to the altered state of enzymatic process caused by mutations in carcinogenesis whereby the altered proteins are formed and the amphibolic substances are metabolized which are in true sense are the resultants of paka by vishamagni. Because, in Vishamavasta, the agni acts in such a manner whereby no specific pattern will be followed and the same is seen in case of a tumor cell where the synthesis of new proteins occur.

The vishama vastha is the effect of vata over the Agni14. Because vata in its Vrudha avastha only cause the Vishama Agni. This Vishamagni is the cause for improper digestion and formation of intermediate end products (Table 2).

In the context of Dhatwagni the effect of Jatara Agni is also important as it enriches the Dhatwagnis and cause their efficacy.

So the two systematic factors are to be born in mind, namely the vata and 'Jatharagni' when the emphasis is being made to understand the carcinogenesis in the light of Vishama Dhatwagni.

Conclusions

1. The State of tumor cell metabolism will be well understood (in Ayurvedic Parlances) if the Dhatwagni Vyaparam is exported.

2. In enzymes the prosthetic groups are consisting metallic ions which are akarajatejas, according to Nyaya and Visheshika. Therefire the enzymes complexes are the Agnis of Ayurveda.

3. In DNA the phosphoric acid group is important to decide the function, which is negative charged, and the positive charged ions like metallic ions are required to initiate the reaction, which are akaraja tejas.

4. The state of Dhatwagni in which cancer like process appears is Vishama Awastha. The Vishama Awastha in general cause improper paka either hyper or hypo or mixed state. The same is seen in carcinogenesis where intermediate by- products are formed in the place of normal proteins. So the state of Vishama awastha of any Dhatwagni is the root cause of tumor in the parlances of Ayurveda.

5. It is also emphasized that the cause for Vishama awastha of any agni is 'Vata'. The effect of Jathara Agni over the Dhatwagnis is also explorable.

Suggestions

In this paper it is suggested that if the above phenomenon is taken into consideration, the cause for carcinogenesis is understood and thereby the various factors like vata, Jatharagni, etc. emphasized as contributing factors for the pethogenisis of a tumor.

Therefore it is suggested to the workers in this field to explore the important factors which in Ayurvedic paralances are called as Jataragni and Vata which are the sole factors causing the Vishama Avastha of Dhatwagnis. It can be also proposed that this phenomenon is likely to divert the attention of the modern research worker towards the Nervous phenonmenon and Harmonal phenomenon in the cancer pathogenisis.

In the thearuaptics also, the use of various elements is explorable in the field of cancer treatment as the prosthetic group consists the various elements and the activisors of the enzymes. So they may initiate a chain reaction and may minimize the tumor effect.

TABLE – 1

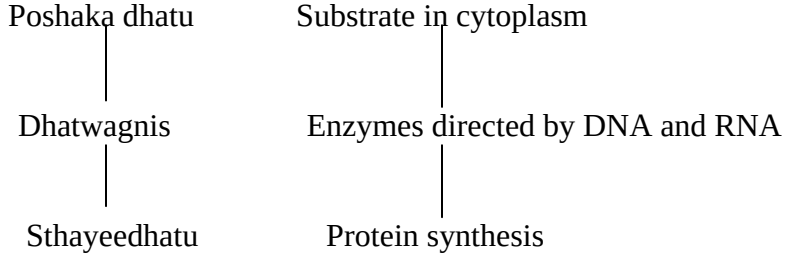
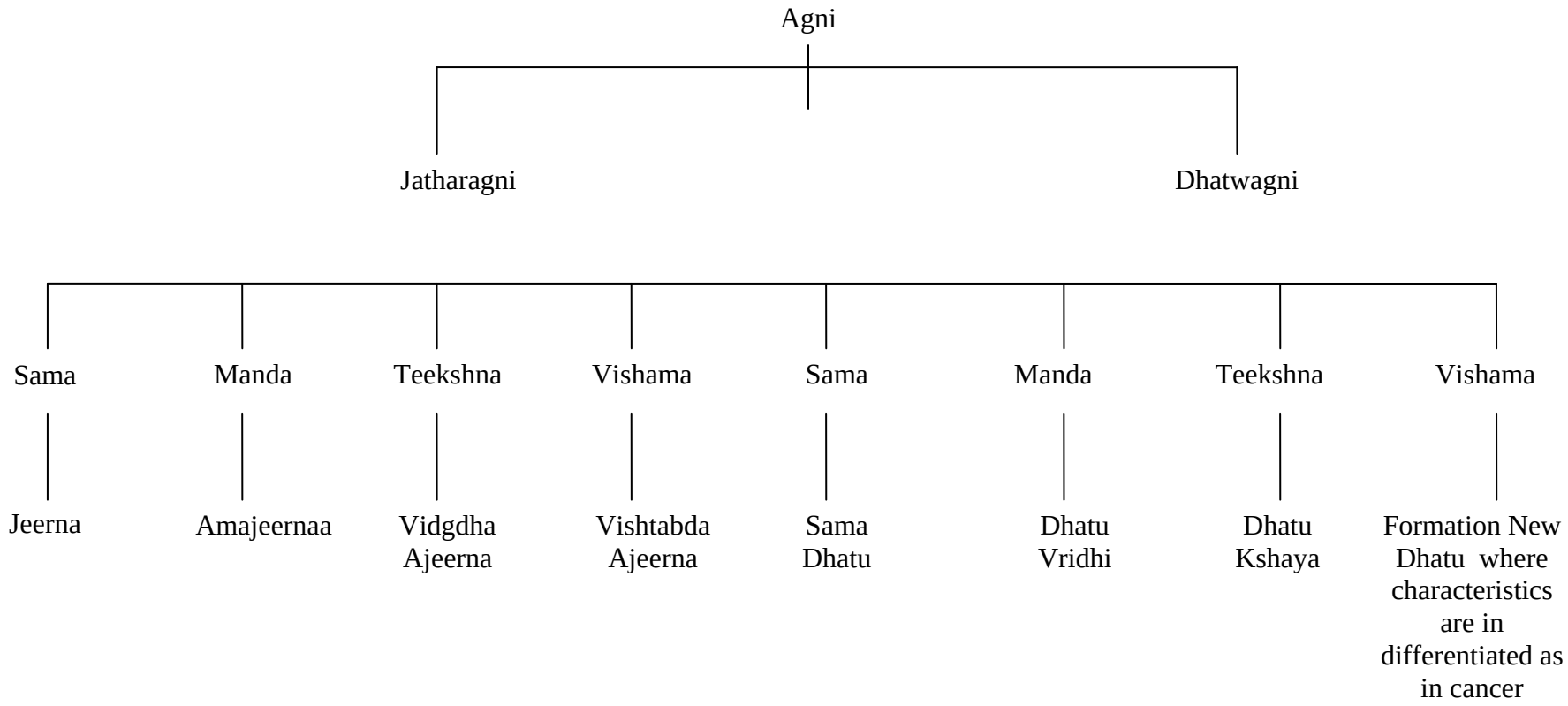


TABLE – 2


Agni
Jatharagni
Dhatwagni
Sama
Manda
Teekshna
Vishama
Sama
Manda
Teekshna
Vishama
Jeerna
Amajeernaa
Vidgdha Ajeerna
Vishtabda Ajeerna
Sama Dhatu
Dhatu Vridhi
Dhatu Kshaya
Formation New Dhatu where characteristics are in differentiated as in cancer

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