

CONCEPT OF AGNI IN *MADHUMEHA* ACCORDING TO AYURVEDA W.S.R. TO DIABETES MELLITUS

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ABSTRACT

The entire range of digestive and metabolic activity of the body takes place with the help of biological entity of the body called *Agni*. *Agni* is very important for our circadian rhythm. There are three types and thirteen in number of *Agni* in the body which are responsible for digestion of food and metabolism at different levels. When the *Agni* becomes weak, a number of unwanted by-products of digestion and metabolism start forming and accumulating in the body at different levels of gross to the molecular level, from local GIT level to the systemic level over tissues and cells. Such products are called *Ama* and act as toxic and antigenic materials. The Ayurvedic aspect is to

consider the distortion of the *Dhatupaka Prakriya* in the state of diabetes as the distortion of the *Agnitatva*. Both the endocrine and exocrine secretions of the pancreas are included in the digestive tract and its intermediate forms. Insulin, secreted by the pancreas is responsible for the digestion of carbohydrates and sugars in the body. The action of this insulin on digestion of sugar and carbohydrates is same as *Agnikriya* from the Ayurvedic point of view. Diabetes presents a deficiency in the action and quantity of the *Aapyagni* called insulin in the body, therefore, the treatment by modern physicians with insulin is the therapy of the *Aapyagni* described in Ayurveda.

KEYWORDS: Circadian rhythm, *Dhatusamayta*, *Dhatupaka kriya*, Metabolic disorder.

INTRODUCTION

In Ayurvedic literature, man is considered as a replica of the universe. Whatever found in the universe, is wholly present in the human body also. This living body which is made up of *Panchabhutas* always undergoes 'wear and tear' phenomenon because of essential daily activities or otherwise, we can narrate it that two processes are continuously going on imitatively in our body- *Chaya* and *Apachaya*. Their balance keep *Dhatus* in Equilibrium. To maintain this balance, a physician should concentrate on the factor which is responsible for all biochemical transformations in the body. This power has been termed as *Kayagni*.

TYPES OF AGNI

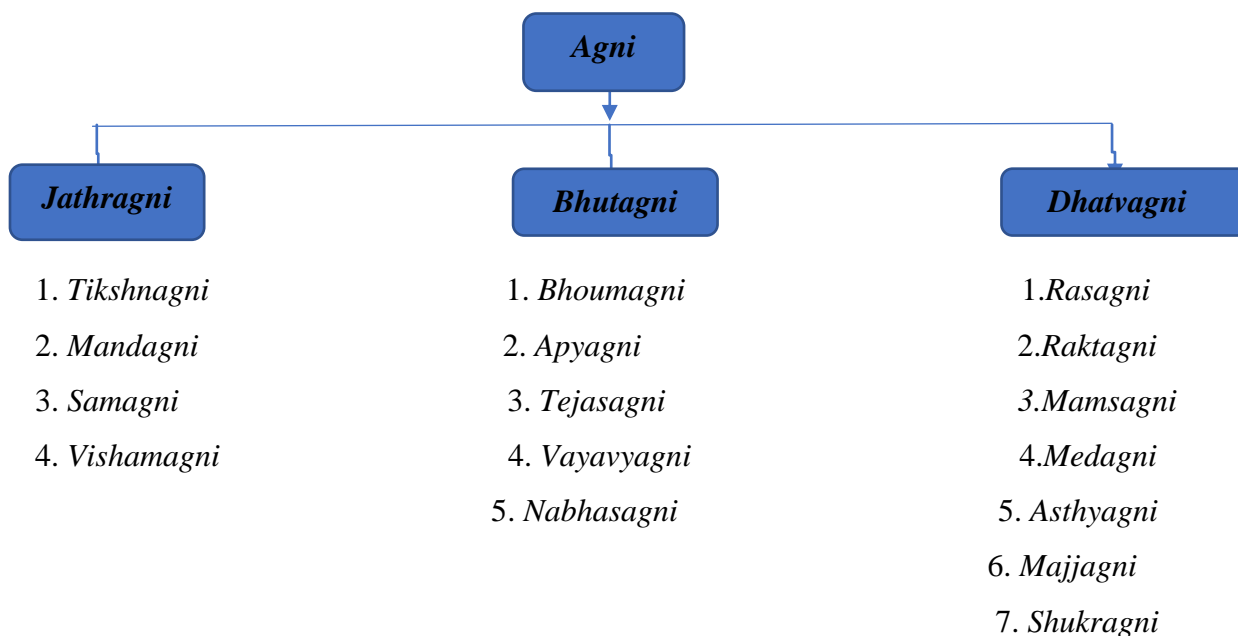
Agni is innumerable because of its presence in each and every *Paramanu* of the body but the enumeration of number of *Agnis* is different in various classical Ayurvedic texts as shown below.

Charak – has described 13 *Agnis*. *Antaragni-1, Bhutagni-5, Dhatvagni-7*.

Sushruta – has described 5 types of *Agnis* as *Pachakagni, Ranjakagni, Alochakagni, Sadhakagni, Bhrajakagni*.

Sharangdhara – has recognized five *Pittas* only.

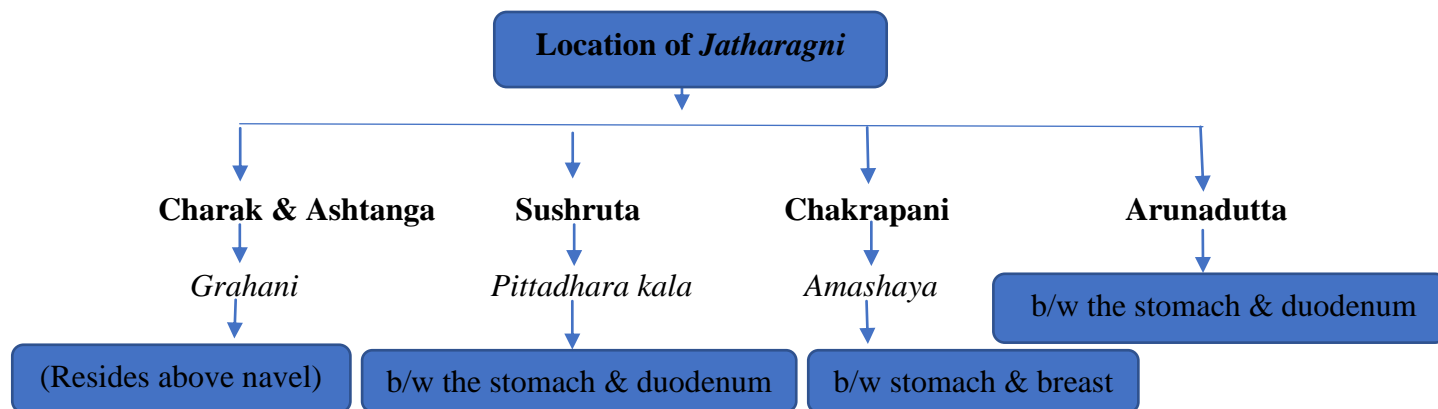
Agni is basically divided into three categories: 1. *Jatharagni (Kayagni)* 2. *Bhutagni* 3. *Dhatvagni*.



KAYAGNI (JATHARAGNI): -Synonym: *Kosthagni* or *Pachakagni*. It maintains life and comprehends various bio-physical and bio-chemical factors which participate in the course of

digestion and metabolism. These factors either normal or abnormal are derived from and are dependent upon any increase or decrease of *Jatharagni*. *Jatharagni* is most important as it influences other *Agnis* inside a living body.

Location – Location of *Jatharagni* is considered between *Amashaya* & *Pakvashaya*.



TYPES: As per influence of *Doshas*, four functional states of *Agni* have been given.^[1]

(1) **Mandagni** - Due to the dominance of *Kapha* out of *Tridoshas*, when *Agni* is unable to metabolise even a small quantity of easily digestible food can be taken as *Mandagni*.

(2) **Tikshnagni**- This state of *Agni* is influenced predominantly by *Pitta Dosha*. Here, even a very heavily diet is digested within short span of time again causing hunger. It can also be referred as *Atyagni*.

(3) **Vishamagni**- When the action of *Agni* is erratic and irregular due to predominance of *Vata Dosha*, can be called as *Vishamagni*. Sometimes, it completely digests food and sometimes causes distension of abdomen, colicky pain etc.

(4) **Samagni**- State of equilibrium of three *Doshas* can be stated as *Samagni*. Here, digestion of food (taken timely) occurs completely without any irregularity and keeps health in the hands.

DEFECT OF *PACHAKAGNI* IN DIABETES MELLITUS

The digestive fire performs the functions of formation, digestion, absorption, combustion, sevenization, dissolution in the body.^[2] Such chemical and biochemical elements, which participate in the processes of digestion (*Paka*) i.e. anabolism, catabolism and assimilation should be included under the Ayurvedic *Agni* element. The action of the digestive fire is in the whole body, however, its main place of action is considered to be the *Pittadhara Kala* (duodenum). Therefore, the *Pachak Pitta* is also called the digestive fire.^[3] This is the reason, planning a diet to bring the fire back to its normal state is the first step in the treatment of the

disorder of the *Pachak Pitta*. Such biochemical elements described in modern medical science, which are called enzymes, also get involved in the fire thought of Ayurveda on the basis of their action. The salivary enzyme called Ptyline, gastric secretion, Duodenal secretion, Intestinal secretion, etc. Due to the function of digestive enzymes, their ingestion comes under *Pachkagni* or *Pachakpitta*. The *Pachkagni* or biochemical substances representing the digestive fire, which are present in the form of liquid from the mouth, stomach, liver, pancreas and duodenum and are present in the body with the association of digestive bile (*Pachakpitta*). Acharya Charaka, considering the action of *Pachkagni*, says that while digestion, it separates defects, *Annarasa*, *Kleda* and *Annamala* from the diet. As a result of this "*Aahara Rasa*" is formed, this juice is absorbed by the association of digestive fire and *Samana Vayu* and this juice reaches the inner body through the digestive system. That is, the initial digestion of food takes place with the digestive fire, but after this digestion, when it is transformed into '*Aahara*' food juices, and is absorbed inside by the intestine, then the *Bhutaagni* starts functioning. The workspace of the *Bhutaagnis* is '*Kostha*' (especially the liver and *Pittadhara Kala*). Along with the *Aahara Rasa*, these *Bhutagnis* reach to the sources of *Rasavaha*, *Raktavaha*, *Pittavaha* etc. and act on the *Aahara rasa*. After this, when they are purified by *Rasagni* and when this juice reaches the *Dhatus* like blood (*Rakta*), muscle (flesh), fat, etc. Thus, based on the field of action and action of the *Adhithana*, the fire element has been described by distinctions such as *Pachakagnis*, *Bhutagni* and *Dhatvagni*.^[4] All the actions of *Paka* taking place within the body are actually performed by the *Agnitatva*. The *Dhatupaka* process occurring in the state of diabetes is considered to be a pathology of *Agnitatva*.

In the treatment of *Agnimandya* (insulin especially), Ayurveda favours medicines and diet that increase the quantitative action of this element. While modern physicians use insulin. The decrease in the action of fire occurs in two ways.

- (1) Due to the activation of the antagonistic element of the specific *Agni*.
- (2) Synthesis of specific *Agni* within the body (originating due to deficiency in the process of creation).

Relating to the digestion of sugars or carbohydrates, which are synthesized or produced in the body by the activation of substances called insulin, or the process of insulin production being disrupted, both due to which there is a disturbance in the digestion process (metabolism) of sugars or carbohydrates occurs. All the biochemical or chemical elements that are helpful in

digestion, metabolism and assimilation processes, which modern science places in the category of enzymes and hormones, it is necessary for digestion to remain in normal condition in terms of action and properties in order to keep nature in action. If there is retardation in the digestive fire in terms of quantity and qualities, then such fluids or food substances are transported inside the body, which are igneous in which part is present. The editing of many different actions is done through the element of fire. In the living body, all the chemical, biochemical, biological substances of the igneous nature (property) responsible for the execution of physical activities and the temperature (heat) required for their action, all these biochemical substances are often subtle and are under bile (*Pitta*)^[5] i.e. all the chemically active substances of the body, which are involved in carrying out fire-actions or bio-chemical activities, are all forms of fire.

DEFECT OF *BHUTAGNI* IN DIABETES MELLITUS

Agni is present in every macro and micro particle of the universe. Each *Paramanu* or cell is although *Panchabhautika* yet according to *Mahabhuta* predominance, it can be named as *Parthiva* or *Aapya*^[6] etc. *Bhutagni* present in molecules transform them and regularly cause the transition. These transformations are done by *Bhutagnis* by themselves or after ignition from other sources e.g. grains like rice acquire *Laghuguna* after particular time period by the action of *Bhutagni* on their own. Raw food along with water and other contents is converted into delicious and assimilable form by *Bhutagnis* with the help of external heat. *Bhutagni* is an important component for digestion and metabolism. The presence of *Bhutagni*, *Apyagni*, etc. is essential for the digestion and metabolism (*Dhatupaka*) of the *Panchabhautika* diet. The human body is *Panchabhautika*. The composition of each atom of this body is also *Panchabhautika* material. The transformation of the *Panchmahabhutas* done in the body takes place due to the presence of the five elements in the body responsible in increasing the *Dhatus* (tissues) and reducing them in deformed states. *Acharya Chakrapani* noted commentator of *Charak Samhita* written that the action of *Parthivagni*, *Apyagni* etc. mainly begins after the food is cooked by *Agni*, which would cause the digestion of the five material food components. After the digestion of the five material components of food by the *Bhutagni*, the seventhization of these five elements becomes in accordance with the five materials composition of the body.^[7] After the action of gastric juice, through the action of *Bhutaagni*, the basic food components are saturated into substances (in the basic elements) equivalent to the body fluids. According to *Acharya Chakrapani*, the chemical, physical, biochemical properties of the past five material substances are equivalent to the five material

substances present in the composition of the body, after the action of *Bhutaagni*. There is a presence of fire necessary for *Bhutaagnipaka* in the atoms and molecules of the *Panchbhautika* substances consumed by the diet.^[8] Digestion of terrestrial components in the diet through *Parthivagni*, digestion of water components through *Aapyagni* gives rise to their unique properties. The components of food produced by being cooked through gastric fire, not being cooked by *Bhutaagni*, but by the fractions of fire of specific *Dhatus* present in the components. Being the seven foldization of the five material food components into elements with properties corresponding to various *Dhatus*. Efforts have also been made in Modern physiology and biochemistry, that various dietary components such as proteins, fats, carbohydrates (starch) which are completely foreign to the body inspite of being substances however their transformation or assimilation into homogeneous elements of the body or organ specific elements. Disorders in the metabolism of carbohydrates, proteins and fats in diabetes, mainly in the metabolism of carbohydrates, are due to the distortion in the nature of *Bhutaagni*. The malformation and disruption in the conversion or assimilation of carbohydrates into homogeneous body components. This is due to the lack of insulin in diabetes.

DEFECT OF *DHATVAGNI* IN DIABETES MELLITUS

Types of *Dhatvagni*: They are seven in number. These are *Rasagni*, *Raktagni*, *Mamsagni*, *Medogni*, *Asthyagni*, *Majjagni* and *Shukragni*. According to both major and complementary cycles, *Aahara Rasa* circulates to provide nutrition for all *Dhatus*. So, it plays a major role in formation of *Dhatu*. Normalcy of all mechanisms of the body is totally dependent upon the normal functioning of *Agni*. If due to any etiological factor causing vitiation of *Agni*, whatsoever it may be, *Agni* gets vitiated resulting in start of pathological events which, eventually, lead to the diseased condition of the body. This vitiation of *Agni* results in formation of *Amadosha*. In Diabetes, almost all the *Dhatus* of the body are deformed. The main reason for this is considered by Ayurveda to be *Dhatvagni* deformity. As long as the process of *Dhatu* formation continues in the body in a stable and natural form, and as long as the disintegration of the *Dhatus* and the process of making *Dhatu* again from its remenant continues in the body normally, then the body is healthy. That is, till then no *Dhatvic Vikriti* or metabolic disorder arises. *Dhatvagnis* play an important role in maintaining the normal state of metabolism. *Dhatupaka* disorders in diabetic arise as a result of *Dhatvagnis Vikriti*. Even that which keeps on decaying every moment has been addressed by the called body i.e. '*Sheeryate iti shariram*.' From this utterance, the human body has been received only on the

basis of the *Sharira*, the action of its continuous anabolism and catabolism. Modern science has described this action with the word 'Metabolism'. The term 'metabolism' refers to chemical changes that take place within the body. They start with the absorption of the nutrient components, and these processes are completed till the excretion of the end products produced in chemical reactions. There are usually two types of chemical changes that occur within the body.

(1) Synthetic change (Anabolic) and

(2) Catastrophic change (catabolic change) "Combined of these two types of changes to remain normal, i.e. normalization of metabolism, the function of *Agni*, especially of *Dhatu* It is assumed. The food from which the-making work is to be accomplished in the future is also purified by the fires and is available for the *Dhatvagni* action. If this process is normal, then *Dhatupaka* is normal but in diabetes, as a result of distortion in *Bhutagni*, *Pachakagni* etc.

Thus, the *Dhatvagnis* are important in both the decay and growth of the body is caused by the symptoms resulting from the pathologies.

Symptoms of *Rasdhathvagni Vikriti* - In diabetes, the transport of nutrients of the body to different cells of the body is disturbed. There are two types of damage or destruction of cells of different organs of the body, one is that the distribution of nutrients in that particular cell is quantitatively distorted or secondly, the qualitative distortion caused by the distortion of the parts of fire present in those nutrients.^[9] The origin of immature *Rasa Dhatu* due to the distortion of *Rasa Dhatvagni* and all the *Dhatu*s such as *Rakta* (blood), *Mamsa* (flesh), *Meda* (fat). Deformation is possible in bones, marrow, sperm, and *Oja*. This is also sufficient to cause anemia in some diabetic patients. The main cause of the impairment in the transport and utilization (Peripheral utilization & transportation glucose) in this disease is the *Rasagni Vikriti*.

Symptoms of *Raktdhatvagni Vikriti*: The *Pitta* in the *Rakta* is the *Raktagni*, the heat required for their actions is collectively called *Raktagni*. As a result of the distortion of fire occurs in the form of *Dhatu* nourishment especially *Mamsadhatu*, nourishment distortion in the sense of touch and color of the body^[10], *Pranavayu* (Oxygen). This blood color follows the blood, always remains with it. Due to the blood disorder occurring in diabetes, there is a fear of occurrence of infarctions due to oxygen distribution in many important organs of the body, heart, head, etc. Conditions that arise mostly in diabetes are fatal. Due to the disorder of *Raktaagni*, the evidence of various blood excreta such as bilirubin, urea and uric acid, etc.,

increases in the blood and the fear of developing corresponding pathologies also remains in diabetes. These disturbances can arise due to the above reasons, due to the prolongation of the progression of diabetes. Due to the defect in blood clotting, blood coagulation defect arises in diabetes. Malformations arising from coagulation defects arising in the kidney and heart.

Symptoms of *Mamsadhatu Vikriti*: *Mamsadhatu Vikriti* in diabetes is due to excessive anabolism of *Mamshadhatu* or muscle atrophy arises. In some diabetic patients, there is a loss of vitality and strength of the muscle.^[11] Various types of bio-chemical actions are performed by the *Mamsaagni* by co-operation of various five material substances reached in the *Mamsa*. The contractions, relaxations, etc., are made only by the result of the fire-action of the *Mamsa* and all these actions are accomplished only by the co-operation of *Mamsaagni*. In diabetes *Mamsadhatu* is distorted, causing weakness and degeneration.

Symptoms of *Medodhatvagni Vikriti*: *Meda* (Adipose Tissue) is the domain of *Medodhatvagni*. Fats are derived from the mutual synthesis of basic compounds called fatty acids and glycerol. *Medadhatu* resides inside the body in more or less quantity and in different forms among all *Dhatu*, therefore it is necessary for *Medoagni* to remain active at all these places. The tasks performed, through *Medogni* are.

- (1) The origin of *Prasadansa*, that is, from fat, bones etc.
- (2) To strengthen the indigenous *dhatu* i.e. *Dehgata Meda Dhatu* and
- (3) To manufacture their *Kittanshas*

In diabetes, due to the slowing down of *Medodhatvagni*, the increase in *Medodhatu* leads to anomalous accumulation in the whole body. In such patients, the face swells, the tongue and eyes are filled (Diabetic Face), in such a situation, the patient starts getting tired.^[12] Due to the anomalous accumulation of fat and mucus, the growth of the body stops, the muscles become lax, such a person becomes lethargic. In lean patients with diabetes, if the *Medoagni* increases beyond the limit, then undesirable actions occur in the body and oxidation of body tissues is greatly reduced and the body becomes lean.^[13] Excessive sweating, moisture in the skin, increase in temperature, heartburn, heart palpitations, increased movement. The *Medodhatvagni* is usually slowed down in diabetes that occurs after the age of 40, resulting in deposition of fat in areas throughout the patient's body, especially the hips, abdomen, and thighs. Deformity occurs in the metabolism of *Medodhatu*, which leads to obesity^[14] and atherosclerosis. Due to the asymmetry, slowness and intensity of *Medoagni*, due to defects in

the bone-nutrients present in it, diseases of bones are also possible due to distortion in the catabolism of *Asthidhatu*.

Symptoms of *Asthidhatvagni Vikriti*: The *Pitta* in the *Asthidhatu* is called *Asthyagni*, and the importance of this fire in the formation and metabolism of *Asthidhatu* is referred to Ayurveda. The fact that the *Asthi* in diabetes (*Prameha*) is not described in the *Dushya*^[15] of the contaminants but the *Medoagni Vikriti* is clearly described suggests the pathology in the *Asthidhatu* digestion dependent on this *Dhatu*. *Asthyagni* is important in the metabolism by mobilizing the useful substances for the formation of *Asthidhatu*. Along with the formation of bone, *Asthyagni* forms the *Kitta* of *Asthidhatu* by the emergence of *Prasadansa*, that is, parts of the superior *Majjadhatu* (marrow) higher than the bone. Thus, *Asthyagni* is important in this area of metabolism. Osteoarthritis, osteosclerosis, osteoporosis and other disorders are often seen in patients with diabetes.

Symptoms of *Majjadhatvagni Vikriti*: *Pittoshma* of *Majjadhatu* is called *Majjadhatvagni*. This *Dhatu* form marrow by being embedded within the bones is called Bone Marrow. It is a group of specific types of cells like other *Dhatus*, which are made of adipose tissue. Within the fine parts of the bones, that same becomes 'marrow'. For the manufacture of *Majjadhatu*, there is action of *Majjaagni* on the *Sharira Sneha*. *Majjaagni* is responsible for the formation of *Shukradhatu*^[16], carries the micronutrients of the higher *Dhatus*. In diabetes, the pathology of the marrow leads to the pathology of the above marrow functions. This causes weakness of the pulse, Neuritis, Peripheral Neuritis, Polyneuritis etc. nuisances arise.

Symptoms of *Shukragni Vikriti*: *Shukra dhatu*, *Pittoshma* is called *Shukragni*. It is the igneous substance responsible for the formation of *Shukradhatu*. In diabetic disease, as a result of the deformity of spermatozoa, inability to reproduce^[17] (both female, male), laxity, premature ejaculation etc. occurs. In women, reluctance in sexual activity (frigidity), deformity in the breast and inability to conceive can arise i.e. in any work done on the male and female of *Shukra dhatu*, there is a distortion of *Shukragni*. Diabetic impotency^[18] and diabetic frigidity in females are the major disorders arising due to the vitiation of this fire (*Agni*). The occurrence of imbalance in the various hormonal physiological elements which are necessary for reproduction and healthy sexual activity is also a sign of spermatorrhea. Due to the deformity of *Shukra Dhatvagni*, it is also possible with diabetes to have the deformity of *Ojas*.^[19] In this way the work of digesting food grains and converting them into various *Dhatus* of the body is accomplished through fire. The main pathology in diabetes is

the metabolic process. If the nature of fire in the body is normal, its activities are going on uninterrupted, then there is no distortion in metabolism and if there is a distortion in the form of *Agni*, then there is a distortion in the digestion and metabolism.

DISCUSSION

When tissue capacity to digest (*Dhatvagni*) even the balanced *Poshakamsha* is hampered. Therefore, it is obvious, that *Ama*, the intermediate by-product formed due to improper assimilation of nutrition by individual cell, which is more specific to *Dhatvagnimandya Janita Ama*. Interaction between *Ama* and *Doshadhatumala* are the platform for the formation of further toxic compound. Alteration of *Dosha*, *Dhatu* and *Mala* ensues. Moreover, it can be said that formation of *Ama* need not necessarily be due to *Jatharagnimandya* only. It may also occur due to *Dhatvagnimandya*. From the above discussion, it may be stressed that impairment of Gross function and cellular function is the root cause of disease.^[20] Here, *Jatharagnipaka* refers to digestive events and *Dhatvagnipaka* relates to intermediary metabolism or *Paka* carried out by *Pachakamsha* in *Sthayi Dhatus* for the maintenance of equilibrium. Due to improper functioning (Insulin deficiency) of *Pachakamsha* present in *Dhatu* leads to *Dhatuvridhi*.

CONCLUSION

Digestive bile (*Pachakpitta*) located in the source of food is believed to be from the stomach. Various digestive enzymes and their actions described in modern medical texts can be obtained from *Jatharagni* and *Bhutagni* trade. The stomach fire is considered to be the root of other fires^[21] in the Metabolism- carbohydrate metabolism, fat metabolism, protein metabolism of various dietary substances in the body can be achieved from *Vipaka*. Parts of *Kayagni* in situ (located in the duodenum) are located in the minor form of *Dhatu* (*Raktadi Dhatu*) so, we can say that *Agni* is prime factor for bodily homeostasis.^[22]

REFERENCES

1. Charak samhita uttrardha savimarsha viddhotini hindivyakhyapeta Pt. kashinath panday and Gorakhnath chaturvedi, Chaukhambha bharti academy publication 2016 page no.461 cha.chi. 15/50-51.
2. Charak samhita uttrardha savimarsha viddhotini hindivyakhyapeta Pt. kashinath panday and Gorakhnath chaturvedi, Chaukhambha bharti academy publication 2016 page no.461 cha.chi. 15/5

3. Sushruta samhita purvardha Ayurvedtattvasandipika hindi vimarsha Dr. Ambikadutta shastri Chaukhambha sanskrita sansthana publication Reprint 2018 page 115 Su.sutra 21/10.
4. Charak samhita uttrardha savimarsha viddhotini hindivyakhyapeta Pt. kashinath panday and Gorakhnath chaturvedi, Chaukhambha bharti academy publication 2016 page no.454 cha.chi. 15/13.
5. Charak samhita purvardha savimarsha viddhotini hindivyakhyapeta Pt. kashinath panday and Gorakhnath chaturvedi, Chaukhambha bharti academy publication 2016 page no.250 cha.sut. 12/11.
6. Sushruta samhita purvardha Ayurvedtattvasandipika hindi vimarsha Dr. Ambikadutta shastri Chaukhambha sanskrita sansthana publication Reprint 2018 page 290 Su.sutra 46/533.
7. Charak samhita Ayurveddeepika Tattvaparakashini hindi vyakhya by Laxmidhar Dwedi Chaukhambha sanskrita sansthana publication print 2020 page 515 Cha.chi. 15/13.
8. Charak samhita Ayurveddeepika Tattvaparakashini hindi vyakhya by Laxmidhar Dwedi Chaukhambha sanskrita sansthana publication print 2020 page 515 Cha.chi. 15/13.
9. Sushruta samhita purvardha Ayurvedtattvasandipika hindi vimarsha Dr. Ambikadutta shastri Chaukhambha sanskrita sansthana publication Reprint 2018 page 75 Su.sutra 15/7.
10. Sushruta samhita purvardha Ayurvedtattvasandipika hindi vimarsha Dr. Ambikadutta shastri Chaukhambha sanskrita sansthana publication Reprint 2018 page 81 Su.sharira 7/15.
11. Sushruta samhita purvardha Ayurvedtattvasandipika hindi vimarsha Dr. Ambikadutta shastri Chaukhambha sanskrita sansthana publication Reprint 2018 page 64 Su.sharira 5/49.
12. Sushruta samhita purvardha Ayurvedtattvasandipika hindi vimarsha Dr. Ambikadutta shastri Chaukhambha sanskrita sansthana publication Reprint 2018 page 75 Su.sutra 15/37.
13. Charak samhita purvardha savimarsha viddhotini hindivyakhyapeta Pt. kashinath panday and Gorakhnath chaturvedi ,Chaukhambha bharti academy publication 2016 page no.318 cha.sut. 17/66.
14. Sushruta samhita purvardha Ayurvedtattvasandipika hindi vimarsha Dr. Ambikadutta shastri Chaukhambha sanskrita sansthana publication Reprint 2018 page 75 Su.sutra 15/37.

15. Charak samhita uttrardha savimarsha viddhotini hindivyakhyapeta Pt. kashinath panday and Gorakhnath chaturvedi ,Chaukhambha bharti academy publication 2016 page no.229 cha.chi. 6/8.
16. Sushruta samhita purvardha Ayurvedtattvasandipika hindi vimarsha Dr. Ambikadutta shastri Chaukhambha sanskrita sansthana publication Reprint 2018 page 75 Su.sutra 15/7.
17. Charak samhita purvardha savimarsha viddhotini hindivyakhyapeta Pt. kashinath panday and Gorakhnath chaturvedi ,Chaukhambha bharti academy publication 2016 page no.349 cha.sut. 17/69.
18. Charak samhita purvardha savimarsha viddhotini hindivyakhyapeta Pt. kashinath panday and Gorakhnath chaturvedi, Chaukhambha bharti academy publication 2016 page no.318 cha.sut. 17/66.
19. Charak samhita uttrardha savimarsha viddhotini hindivyakhyapeta Pt. kashinath panday and Gorakhnath chaturvedi ,Chaukhambha bharti academy publication 2016 page no.229 cha.chi. 6/8.
20. Ashtanga Hridhya Nirmala hindi commentary by Dr Brahmanand Tripathi Chaukhambha bharti academy publication Reprint 2019 page no 515 A.H. Ni. 12/1.
21. Sushruta samhita purvardha Ayurvedtattvasandipika hindi vimarsha Dr. Ambikadutta shastri Chaukhambha sanskrita sansthana publication Reprint 2018 page 115 Su.sutra 21/10.
22. Charak samhita uttrardha savimarsha viddhotini hindivyakhyapeta Pt. kashinath panday and Gorakhnath chaturvedi, Chaukhambha bharti academy publication 2016 page no.452 cha.chi. 15/3-4.