

Journal of **Ayurveda and Integrated Medical Sciences**

www.jaims.in



An International Journal for Researches in Ayurveda and Allied Sciences



not of not of

Journal of

Ayurveda and Integrated Medical Sciences

REVIEW ARTICLE

May 2023

A review article in the role of liver function test in Annavahasrotas Vyadhi (Ajirna & Amlapitta)

Suneet Roy¹, Avadhesh Kumar², Jitendra Kumar³, Prakash Raj⁴

- ¹Post Graduate Scholar, Department of Rog Nidan Evum Vikriti Vigyan, Govt. PG Ayurveda College and Hospital, Varanasi, Uttar Pradesh, India.
- ²Associate Professor & Hod, Department of Rog Nidan Evum Vikriti Vigyan, Govt. PG Ayurveda College and Hospital, Varanasi, Uttar Pradesh, India.
- ³Assistant Professor, Department of Rachna Sharir, Govt. PG Ayurveda College and Hospital, Varanasi, Uttar Pradesh, India.
- ⁴Assistant Professor, Department of Kriya Sharir, Govt. PG Ayurveda College and Hospital, Varanasi, Uttar Pradesh, India.

ABSTRACT

A person's diet and food patterns play a significant role in their overall health and well-being. Unhealthy food patterns can contribute to the development of various lifestyle disorders and chronic diseases. In current modern scenario we see a large proportion of population is affected by Gastric disorders. Unhealthy and incompatible foods, drinks, unhygienic lifestyle lead to disturbance in *Agni* and GI functions in human, and also harming the most powerful organ which is also seat of *Agni* i.e., *Yakrit*. Liver perform and govern majority of metabolic activities but when it get damages the *Bhutagni Paak Kriya's* disturbance leads to disrupted state of *Agni*, then two main disorder related to *Annavahasrotas Vyadhi* mentioned i.e., *Ajirna* and *Amlapitta* occurs. *Acharya Sushrut* has stated *Pitta* and *Agni* are same as the *Karma* and features of *Pitta* and *Agni* are equivalent hence in *Ajirna* and *Amlapitta* disease we can see sign of hepatic damage in Liver Biomarkers (LFT).

Key words: Ajirna, Amlapitta, Annavasrotas Vyadhi, Yakrit, Agni, Liver Function Test

INTRODUCTION

Fast-track life style has made man restless to achieve his unlimited desires in a very short period of time. These desires produce different types of anxiety, worry, anger, fear and depression which directly or indirectly lead to various types of gastrointestinal tract disorders. In short, we can say that *Hurry, Worry &*

Address for correspondence:

Dr. Suneet Roy

Post Graduate Scholar, Department of Rog Nidan Evum Vikriti Vigyan, Govt. PG Ayurveda College and Hospital, Varanasi, Uttar Pradesh, India.

E-mail: suneetroy2@gmail.com

Submission Date: 12/03/2023 Accepted Date: 19/04/2023
Access this article online

Quick Response Code

Website: www.jaims.in

DOI: 10.21760/jaims.8.5.33

Weather are the main causes of GI disorders. Thus, this type of pattern may also lead to the development of the disease *Annavahasrotas* like *Ajirna*, *Amlapitta*, *Agnimandya* etc.

Annavaha Srotas is the channel for transportation, digestion and absorption of food. Its Mool are Amashaya, Vamparshwa as per Charak^[1] and Amashaya-Annavahini Dhamani as per Sushruta.^[2] Agnimandya is a condition in which food is not digested properly due to diminished power of Jatharagni. Any vikriti i.e. disturbed functioning of the Agni is prime cause of pathogenesis of any disease.^[3]

Normally whatever type of food consumed, is firstly acted upon by *Jatharagni* in the gastro-intestinal tract (Ch. Chi 15/5), there upon it is transported to the liver for *Bhutagni Paka* and thereafter the product of nutrition is processed in the tissues by the *Dhatavagni*.

Dushti Lakshan^[4]

Not willing to take food, diminished desired towards food, unable to digest the food, nausea and vomiting

etc. are the chief features of *Annavaha Srotas Dushti Lakshan*.

Concept of Agni and Pitta^[5]

The origin of *Pitta* is derived from "Tapa," which refers to the processes of digestion and combustion, providing nourishment and maintaining the body's heat, color, and luster. There have been varying opinions among different scholars regarding the relationship between *Pitta* and *Agni*. Some believe that *Pitta* is *Agni*, while others hold different views.

According to *Acharya Sushruta*, there is no *Agni* in the body without *Pitta*. *Acharya Marichi* also emphasizes that the quality of *Agni*, whether it is normal or deranged, depends on the state of *Pitta*.

Chakrapani explains that the role of Pitta in the body is not actual combustion but rather providing the heat for Agni. Additionally, Acharya Sushruta describes five types of Agni as different manifestations of Pitta. Acharya Bhoj also considers Pitta as Agni, including the digestive fire responsible for various enzymatic activities such as digestion, stimulation, and penetration.

Hemadri describes Pitta as having five divisions located within the Pakvashaya and Amashaya, composed of the five elements. It lacks liquidity despite being a liquid due to the predominance of the Tejas element. It is referred to as "Anala" because of its cooking function, dividing food into essence and waste. It supports other Pitta and Dhatvagnis in the body, providing them with strength and is known as "Pachaka Pitta".

While there are examples in ancient texts that suggest *Pitta* and *Agni* are synonymous, certain doubts arise regarding this concept. For instance, aggravating factors such as pungent and heating substances are known to weaken *Agni* instead of strengthening it. Another example is *Ghrita*, which pacifies *Pitta* but enhances *Agni*. Additionally, the quote from *Acharya Sushruta*, "Samadoshah Samagnishcha" clearly indicates that *Pitta* and *Agni* are not the same.

Agni is responsible for breaking down the food into its constituent elements and transforming them into the

body's tissues and energy. When *Agni* is strong, it can digest food efficiently and produce high-quality nutrients that nourish the body. When *Agni* is weak, improper digestion of *Ahara* leads to formation of *Ama* in the body, which can cause a variety of health problems.

According to *Acharya Sushruta*, five types of *Agnis* are illustrated, viz. *Pachakagni, Ranjakagni, Alochakagni, Sadhakagni* and *Bhrajakagni*. However, there is an indirect reference of five *Bhutagnis* underlying in the brief description made to the transformation of food stuff. (Sh.Su.21/10.)

Vagbhata has described different types Agni, viz. – Bhutagnis-5, Dhatvagnis-7, Dhoshagni-3 and Malagni - 3.

Sharangadhara has recognized five pittas only (Pachak, Bhrajak, Ranjak, Alochaka and Sadhak) (Sha.Sa.Pu.Kh.-5/32).

Bhavamishra has followed Acharya Charaka and Vagbhata (Bh.Pu.Kh.-3/169,180).[16]

Types of Agni include (Total 13): (Ch.Chi.15/38).

Jatharagni - This is the digestive fire located in the stomach and small intestine.

Bhutagni - This is the fire responsible for transforming the five elements (Panch Mahabhut) into the body's tissues.

Dhatvagni - This is the fire responsible for transforming the tissues into the body's energy.

Ajirna (Indigestion)

Ajirna is a disease which is caused by Agnimandya. Which indirectly related to Agni of Pittadhara Kala. According to Ayurveda, Agni is considered as the key factor for digestion and it is responsible for good health of an individual.

Nidana^[6]

Profuse drinking (*Atyaambupaan*), inappropriate food intake, over eating, too fast or slow eating, devoid of natural urges (*Veg Dharan*) irregular food timing, untimely sleeping pattern (*Swapnviparyay*), psychological factors i.e., emotional disturbance, fear,

anxiety, and stress also causes disturbances in Digestion.

Roopa/Lakshan^[7]

Lakshan or Rupa of Ajirna shows variety of symptoms which includes heaviness, lethargy, nausea, delusion, backpain, body ache, excessive thirsts fever, vomiting, tenesmus, indigestion, anorexia, tastelessness and is like poison.

Samprapti^[8]

Samprapti (Pathogenesis) – Due to excessive usage of the above factors the power of *Agni* or digestive fire becomes very week, hence it cannot digest the food properly even in a very small amount. In this disorder, *Pachakapitta, Samanvata*, and *Kledak Kapha* are vitiated mostly. Vitiation of *Tridosha* specially *Kapha* dominating.

Intake of Aaharaj, Viharaja, Mansika, Agantuj Nidan



Vitiation of Tridosha specially Kapha is dominating



Impairs Jathragni



Agnimandya (digestive Insufficiency)



Ajirna (Indigestion)

Samprapti Ghataka

- Dosha Samanvata, Pachaka Pitta.
- Dushya (Pachakagni, Rasa) Rasadhatu.
- Adhisthana Amashya, Grahani.
- Strotas (Annavaha) The disease involved Amashya, Grahani, and Pakwashaya, Srotas seem to be mainly concerned but Rasavaha Strotas which is the first Ama produced due to Agni may get involved.
- Vyadhi Amashayothana.
- Dushtiprakara Sanga

- Agni Mandagni
- Marga Abhyantara

Bheda^[9]

- Vishtabdha Ajirna causes due to vitiation of Vata Dosha. It is characterized by pain in abdomen, pain all over the body, fatigue, non-elimination of stools and flatus.
- Vidagdha Ajirna caused due to vitiation of Pitta Dosha. It causes burning sensation, different kinds of pain, increased feeling of thirst, tiredness, fainting and giddiness.
- Ama Ajirna cause due to vitiation of Kapha Dosha. The feature of this are puffines around the eyes and face, frothy and increased salivation in the mouth, nausea, repeated belching.
- Rasa Sesha Ajirna This is caused due to heavy and excess quantity of taken food, most of the part is digested and some part of food still remain undigested which causes belching, heaviness in chest, salivation.
- Dinpaki Ajirna^[10] According to Vijayrakshita, In Dinpaki Ajirna digestion completes within one day and one night. This due to overages of quantity and timings of food and waiting alone is required for such condition and its not harmful.
- Prakrita Ajirna^[10] According to Vijayrakshita, Prakrita Ajirna prevails till the consumed food is completely digested. After the completion of digestion it manifest symptoms like hunger, thirst, defecation, etc. Clinical features of Ama like tympanitis are not seen.

Amlapitta

Definition & Etymology of *Amlapitta*^[11]

The word *Vidaha* means half digested. The pitta which attains excessive *Amlata* because of *Vidagdha Paka* is called *Amlapitta*.

'Amlapitta' is a combination of two words Amla and Pitta. Among these two words the word Amla denotes

the *Rasa* (Sour taste) and the *Pitta* denotes the *Dosha* involved in this disease.

Amla according to Charaka is considered as the Prakruta Rasa of Pitta whereas Acharya Sushruta says that Katu is the Prakruta Rasa of the Pitta and it attains Amlata in Vidagdhavastha. The condition where the natural Katu Rasa of Pitta is replaced by Amlata due to Vidagdhapaka can be called Amlapitta.

Nidana^[12]

Excessive intake of unhealthy, spicy, hot and sour junk food, new grains, untimely food, intake of alcohol, suppression of urges, oily food psychosomatic disorders delayed sleeping disturbs digestion and results in aggravation of *Pitta*. This increase in pitta turns in to *Amlapitta Vyadhi*.

Purvaroopa

In ancient Ayurvedic texts, no specific *Purvarupas* are given for *Amlapitta*. But while going through the patient's history, *Ajirna* is the common symptom reported before the actual symptom (i.e., *Rupa*). In *Ajirna*, *Amla* and *Drava Guna* of *Pitta* are increased. In this stage if the patient continues the *Nidana Sevana*, it leads to production of *Annavisha* which when mixed with vitiated *Pitta Dosha*, creates *Amlapitta*.

So, the symptoms - Ajirna & Annavisha can be described as Purvarupas of Amlapitta.

Roopa^[13]

Indigestion, fatigue, nausea, sour belching, heaviness, burning sensation in throat and chest, tastelessness, burning sensation in body are the symptoms of aggravated *Pitta* due to *Nidan Sevana* showing the cardinal features of *Amlapitta Vyadhi*.

Samprapti^[14]

According to *Acharya Kashyapa*, the *Nidana Sevana* causes *Doshaprakopa* especially *Pitta Dosha*. This eventually creates *Mandagni* due to which ingested food become *Vidagdha* form and attains *Shuktibhava*). This *Vidagdha* and *Shuktibhava* of food creates *Amlata* in *Amashaya*. This condition is called *Amlapitta* (K.S.16/10-12).

Nidan Sevana



Doshdushti specially pitta



Mandagani Rasa dhatudushti



Ajirna (if apathy is taken continuously)



Annavisha (Vidagdha and attains shukti bhava)



Increased Amla and Dravaguna of Pitta in Amashaya



Amlapitta

Samprapti Ghataka

Dosha: Tridosha (mainly Pitta)	Dushya: Rasa, Rakta
Srotasa: Annavaha	Agni: Jatharagni
Ama: Jatharagnimandhyajanya	Udbhavasthana: Amashaya
Adhisthana: Adhoamashaya	Sanchara: Annavaha
Swabhava: Chirkari	Pradhanta: Pitta Doshapradhana

Bheda

Amlapitta is classified according to the *Dosha Sansarga* and *Sthanadusti* of the *Srotasa*. Bhavamishra has classified according to the *Sthanadusti* of the *Srotasa*.

(A) According to the Dosha Sansarga

Kashyapa Samhita: Vataja, Madhava Nidana: Vatadhikya

Pittaja Kaphadhikya

Kaphaja Vata - Kaphadhikya

Shleshma - Pittaja

(B) According to the Sthanadusti of the Srotasa

Madhava Nidana Urdhvaga

Bhavaprakasha Adhoga

Sadhyasadhyata^[15]

- 1. According to *Acharya Madhava Nidana, Amlapitta* with recent origin is *Sadhya* but in chronic stage it becomes *Yapya or Krichhasadhya*.
- 2. According to *Acharya Kashyapa, Amlapitta* becomes *Asadhya* (incurable) when its associated with *Upadrava*.

Sapeksha Nidana

The symptoms of *Amlapitta* are similar to that of other diseases like *Vidagdhajirna*, *Paittika Shoola* and *Grahani*, etc. So, it is difficult to differentiate *Amlapitta* from other diseases. Some features of differentiating *Amlapitta* from other diseases are as follows:

Vidagdhajirna	Amlapitta
Acute stage	Chronic stage
Mostly aggravated in <i>Pachana Kala</i>	No relation with food ingestion
Symptoms subsides in <i>Jirna</i> <i>Kala</i>	It is not necessary
Relieves by <i>Pachana</i> drugs	Aggravated by <i>Pachana</i> drugs

Paittika Shoola	Amlapitta
Pain is severe	Pain is mostly absent or of mild nature
Relieved by administration of food	Not necessary
Aggravated in <i>Paittika Kala</i>	Bhojanottara

Liver Function Test^[16]

As we all know the liver function test in short LFT is basis of diagnosing the function of liver by evaluating various physiological and biochemical biomarker in number of pathological conditions such as Jaundice, liver cirrhosis, hepatitis, heart disease.

Alkaline Phosphatase (ALP) high levels of ALP are seen in patients with Bile duct obstruction, Hepatitis, Cirrhosis, Liver cancer, Bone diseases.

Alanine Aminotransferase (ALT) is also known as serum glutamate-pyruvate transaminase (SGPT) Very high levels of ALT are seen in patients with acute hepatitis, moderately high levels of ALT are seen in patients with Chronic hepatitis, Blocked bile ducts, Cirrhosis, Liver cancer.

Aspartate Aminotransferase (AST) is also known as serum glutamic oxaloacetic transaminase (SGOT) High levels of AST are seen in patients with liver and muscle damage, However AST is not specific for liver damage and is measured along with ALT to diagnose a suspected liver disease.

Serum Proteins

Albumin is the main protein synthesized, Low levels of albumin indicates that liver is not functioning properly and can be seen in patients with Cirrhosis Chronic Hepatitis, Poor nutrition, Kidney disease, Infections.

Bilirubin - High levels of bilirubin are seen in patients with:

- Hepatitis.
- Liver cirrhosis.
- Bile duct obstruction.
- Gallbladder cancer.
- Gallstones.
- Genetic diseases like Gilbert's syndrome.

Gamma Glutamyl Transferase (GGT).

Coagulation Profile

Prothrombin Time (PT)

Classification of Liver Function Tests

- Tests that assess excretory function of the liver: Bilirubin in serum and urine, and urobilinogen in urine and faeces.
- Tests that assess synthetic and metabolic functions of the liver: Serum proteins, serum albumin, serum albumin/globulin (A/G) ratio, prothrombin time (PT), and blood ammonia level.
- Tests that assess hepatic injury (liver enzyme studies): Serum alanine aminotransferase (ALT),

- serum aspartate aminotransferase (AST), serum alkaline phosphatase, serum γ -glutamyl transferase (GGT), and 5'-nucleotidase (5'-NT).
- Tests that assess clearance of exogenous substances by the liver: Bromosulphthalein excretion test.

Symptoms due to raised LFT markers^[17]

- Nausea and vomiting.
- Right upper abdominal pain.
- Diarrhoea (may have pale stools and dark urine).
- Steatorrhoea.
- Malaise.
- Flatulence.
- Indigestion.
- Jaundice.
- Fever.

MATERIALS AND METHODS

Sources of data

Literary review about disease *Ajirna* and *Amlapitta* is collected from classical text of Ayurveda, thesis of previous research, scientific journals, periodical magazines, monographs & other available sources.

Subjective Criteria

- 1. On the basis of etiological factors.
- 2. On the basis of sign and symptoms.

SN	Ayurveda features of Ajirna / Amlapitta	Modern feature
1.	Vibandho Atipravrutti	Constipation or Excessive elimination of faeces.
2.	Glanimaruta Moodhata	Exhaustion, Deviation of vata from its normal path
3.	Visthambho Gaurava Bhrama	Abdominal distension, heaviness and vertigo.

4.	Shiraso Ruk, Moorcha, Bhrama, Prusta Katigraha	Headache, fainting, giddiness, Stiffness in back & waist.
5.	Jrumbha, Angamarda, Trushna, Jwara, Chardi, Pravahana	Yawning, body ache, thirst, fever, vomiting, tenesmus
6.	Arochaka, Avipaka	Anorexia, indigestion.
7.	Anaha, Adhmana	Constipation, Flatulence/ tympanitic
8.	Utkleda, Udgara Yathabhukta Avidagda Pravartate	Nausea, belching similar to those occur just after meal.
9.	Amla Sadhooma Udhgara, Sweda, Daha	Sour & hot belchings, Perspiration, burning sensation inside.
10.	Vividha Vatavedana	Pain in the abdomen

DISCUSSION

From the point of view of Ayurveda (Ch.Su.12/11), *Pitta* has been described as *Agni* (fire), since it performs fire-like actions i.e., *Paka*, which refers to *Pachana* (digestion); *Dahana* (burning, combustion or oxidation) including *Bhinna Samghata* (splitting), *Tapan* (heat production), *Parninama* (conversion), *Paravritt* (transformation), *Prakasana* (illumination), *Ranjana* or *Vranakara* (colouration) and (*Prabhakar* to cause lustre). [18]

Acharya Sushruta has mentioned in its text Sutrasthan. [19] The question if Pitta and Agni are identical or different has been raised and answered by Susruta in the 21st chapter of Sutrasthana. And is stated that Pitta is the same as Agni, since it performs Dahana, Pachana and similar actions performed by the fire, hence Pitta is known as Antaragni and also by evaluating Ayurvedic texts the composition (colour, consistency, taste and smell such as Shukla-Arunavarja or Panduvivarjita, Anadhika Sneah, Katu and Amla Visragandha, Vaigandhya and Putigandhya, Nila and Pita etc.) and features of Pitta is more familiar to the biliary secretions and also the site of these secretions are same i.e. in between Amashaya and Pakwashaya

(*Grahini*).^[20] And whenever there's imbalances occur due to any factor, we get variety of symptoms like flatulence, belching, impaired digestion, infrequent bowel evacuation etc. which is same as the *Annavahasrotas Dushti Lakshana*.

CONCLUSION

In our classical text it is clearly written as Pitta or Agni are most similar to each other and also by evaluating the literatures we found that the quality of pitta produce is very much linked to hepatic secretions in Grahini and also Pitta produced which is the part of which ultimately works on Ahara coming from Amashaya. Nearly all types of major metabolism or Bhutagni Paak which is happening in our body is govern by Yakrit itself, so whenever any type of hepatic pathology which can be of any source whether from bacteria, viral drug induced etc. it hampers the metabolism subsequently by decreasing Bhutagni Paak Kriya which ultimately leads to depreciation in all the metabolic activities related to digestion hence the quality of Pitta it produced is also get deprived therefore we see variety of Lakshan of Ajirna and Amlapitta.

REFERENCES

- Charak Samhita volume 1 Viman Sthan chapter 5 verse 9 By Kashinath Kashinath Shastri And Gorakhnath Chaturvedi, Chaukambha Sanskrit Pratishthan.
- 2. Sushrut Samhita volume 1 sharir sthan chapter 9 verse 12 By Ambikadutt Shastri Chaukambha Publication.
- Ashtang Hridyaam vidyotini teeka nidan sthan chapter 12 verse 1 by Kaviraj Atridev gupta, Chaukambha Prakashan, Varanasi.
- 4. Charak Samhita By Kashinath Kashinath Shastri And Gorakhnath Chaturvedi Viman Sthan chapter 5 verse 9 page no. 711 By Chaukambha Sanskrit Pratishthan.
- Physiology aspects of agni by dr akash kumar Agarwal. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3221079/
- 6. Sushrut Samhita by Kaviraj Dr Ambika dutt sashtri volume 1 sutra sthan chapter 46 verse 507. Pg no 278
- 7. Charak Samhita By Kashinath Kashinath Shastri And Gorakhnath Chaturvedi Chikitsa Sthan chapter 15 verse 45-46 page no. 460 By Chaukambha Sanskrit Pratishthan.

 Charak Samhita By Kashinath Kashinath Shastri And Gorakhnath Chaturvedi Chikitsa Sthan chapter 15 verse 42-44 page no. 460 By Chaukambha Sanskrit Pratishthan.

- Sushrut Samhita by Kaviraj Dr Ambika dutt sashtri volume 1 sutra sthan chapter 46 verse 506. Pg no 278
- Madhav Nidan Madhukosh Vyakhya By Brahmanand Tripathi chapter 6 verse 6 page No. 280 Chaukambha Sanskrit Pratishthan.
- Madhav Nidan Madhukosh Vyakhya By Brahmanand Tripathi chapter 51 verse 1 page No. 225 Chaukambha Sanskrit Pratishthan.
- 12. Madhav Nidan Madhukosh Vyakhya By Brahmanand Tripathi chapter 51 verse 1 page No. 225 Chaukambha Sanskrit Pratishthan.
- 13. Madhav Nidan Madhukosh Vyakhya By Brahmanand Tripathi chapter 51 verse 2 page No. 226 Chaukambha Sanskrit Pratishthan.
- 14. Kashyap Samhita by Dr. P.V Tiwari chapter 16 verse 10-12 Chaukambha Sanskrit Pratishthan.
- Madhav Nidan Madhukosh Vyakhya By Brahmanand Tripathi chapter 51 verse 7 page No. 228 Chaukambha Sanskrit Pratishthan.
- Essentials of clinical pathology by Shirish M. Kwathalkar Chapter 5 Liver Function Tests Page no. 66 Jaypee Publications.
- 17. Textbook Of Pathology By Harsh Mohan.
- 18. Charak Samhita By Kashinath Kashinath Shastri And Gorakhnath Chaturvedi Sutra Sthan chapter 12 verse 11 page no. 251 By Chaukambha Sanskrit Pratishthan.
- Sushrut Samhita by Kaviraj Dr Ambika dutt sashtri volume 1 sutra sthan chapter 21 verse 9. Pg no 114. By Chaukambha Sanskrit Pratishthan.
- 20. Concept Of Angi by Vd Bhagwaan Daas By Chakumbha Sanskrit Series Office Varanasi.

How to cite this article: Suneet Roy, Avadhesh Kumar, Jitendra Kumar, Prakash Raj. A review article in the role of liver function test in Annavahasrotas Vyadhi (Ajirna & Amlapitta). J Ayurveda Integr Med Sci 2023;05:197-203. http://dx.doi.org/10.21760/jaims.8.5.33

Source of Support: Nil, **Conflict of Interest:** None declared.