



The Concept of Lactose Intolerance in Ayurveda

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Abstract:-

Ayurveda has its peculiarity about food and its role in the maintenance of health and treatment of diseases since before the emergence of modern medical science. Ayurveda considers that wholesome food is the cause of health and wellbeing while unwholesome food is the root cause of all diseases. In Ayurveda, milk is considered as Rasayan (rejuvenator), Jeevaniya (vitaliser) etc. Modern medical science also considers milk as complete food. Lactose intolerance is the condition which restricts consumption of milk in human beings. Most humans, like other mammals, gradually lose the intestinal enzyme lactase after infancy and with it the ability to digest lactose, the principle sugar in milk. Approximately 70% of the world population has hypolactasia, which often remains undiagnosed and has the potential to cause some morbidity. The condition of *DugdhaAsatmyata* as described in *Ayurveda Mahodadhi*, an ancient text about food and nutrition, is the description of lactose intolerance. The line of treatment of *DugdhaAsatmyata* can be traced back to ancient texts like *Charak Samhita* etc. where the condition had not been described as separate entity but can be traced scattered here and there. The present paper will put forward the concept of lactose intolerance and its line of treatment in Ayurveda.

Keywords- Lactose intolerance, DugdhaAsatmyata, Ayurveda.

Introduction:-

Ayurveda is the science of life. Its first and foremost aim is to maintain the health of a healthy person¹. For a healthy life, three *Upstambha* (supporting pillars) had been described in Ayurveda, *Aahar* (food) being the first among them². The importance of *Aahar* (food) can be deduced from the fact that *Charak* had clearly stated that wholesome food is the base of health while unwholesome food is the root cause of all diseases³. *Sushrut* had also quoted that food is the base of *Prana* (vitality), *Bala* (strength), *Varna* (complexion) and *Oja*⁴. *Acharya Charak* had clearly stated that *Aahar* should be which maintains the health of a person⁵. The first food of human beings is milk. In *Ayurveda*, milk is considered as *Rasayan* (rejuvenator), *Jeevaniya* (vitaliser), *AajanmaSatmya* (wholesome since birth) etc. *Charak* had stated that milk is best among *Jeevaniya Dravya*. As per contemporary sciences also, milk is nearly a complete food in itself, providing necessary nutrients in adequate amounts (except iron) to sustain life. Milk is a good source of protein, fat, calcium and several other nutrients. Beside calcium, other nutrients present in milk are sulphur, magnesium, manganese, iodine, zinc etc. It is also rich in riboflavin, vitamin B₁₂ vitamin A and K. Milk does not contain niacin but contains the amino acid tryptophan which can be converted into niacin. It is a very poor source of iron and vitamin C. The major sugar in milk is lactose consisting of galactose and glucose. No other food contains galactose or glucose in free form. It helps in growth and development and also aids calcium absorption. Milk contains small amount of glucose and other sugars⁶.

DugdhaAsatmyata which can be correlated with lactose intolerance is the state in which milk is not assimilated properly. This condition deprives the patient from various nutrients. Symptom of *DugdhaAsatmyata* is *Aadhman* which includes *Aatopa*, *Ruja* and *AadhmatUdar* (the sign and symptoms of *Aadhman*). These symptoms coincide with borborygmi, abdominal pain/cramps and distention of abdomen

respectively present in lactose intolerance. Other symptoms of lactose intolerance include flatulence and diarrhea or vomiting. These symptoms are not included under *Aadhman* in Ayurveda but the prodromal features of diarrhea include some features of *Aadhman* as per *Sushrut*⁷.

MATERIALS:-

Classical texts of Ayurveda e.g. *CarakSamhita*, *SushrutSamhita* etc. along with modern literature are critically analyzed.

LACTOSE INTOLERANCE⁸:-

When clinical symptoms are induced by the ingestion of lactose the term lactose intolerance is applied. Lactose intolerance is a condition in which people have symptoms due to the decreased ability to digest lactose, a sugar found in milk products. Those affected vary in the amount of lactose they can tolerate before symptoms develop. Symptoms may include abdominal pain, bloating, diarrhea, gas, and nausea. These typically start between one half and two hours after drinking milk or eating milk products. Severity depends on the amount a person eats or drinks. It does not cause damage to the gastrointestinal tract.

3.1 Pathophysiology:

Lactose digestion is slower than that of sucrose and hydrolysis has been considered the rate limiting step for the overall process of lactose absorption. Lactose is hydrolysed to glucose and galactose on the microvillus membrane of the intestinal absorptive cells. When lactose is not absorbed by the small bowel, it passes rapidly into the colon as a consequence of the osmolality of intraluminal disaccharides. In the colon, lactose is converted to short chain fatty acids and gas (hydrogen, methane, etc.) by the bacterial flora, producing acetate, butyrate and propionate. The short chain fatty acids are absorbed by the colonic mucosa and this route salvages malabsorbed lactose for energy utilization. This is the mechanism by which the newborn colon also salvages lactose and the adult with low intestinal lactase activity may adapt to persistent lactose ingestion. This fermentative process not only conserves nutritionally important carbohydrate but also serves as the basis of the lactose breath hydrogen test.

Clinical symptoms in persons with lactose intolerance are quite variable. Important factors include the osmolality and fat content of the food in which the sugar is ingested, the rate of gastric emptying, the individual sensitivity to the intestinal distention produced by the osmotic load of unhydrolyzed lactose in the upper small bowel, the rate of intestinal transit and the response of the colon to the carbohydrate load. The higher the osmolality of gastric contents and higher the fat content of the diet containing the lactose, the slower the gastric emptying and fewer the symptoms induced by the sugar.

Lactose intolerance may be due to a primary reduction in lactase expression or to the secondary effects of variety of mucosal diseases.

3.2 Primary Reduction:-

Three clinical phenotypes are associated with primary reduction in lactase activity:

1. **Developmental Lactase Deficiency:** it occurs in preterm infants as a result of relatively low intestinal lactase activities found before 32 weeks of gestation.
2. **Human Congenital Lactase Deficiency:** It is an extraordinarily rare condition. It is inherited in an autosomal recessive fashion, resulting in the complete absence of active lactase enzyme. This condition has been only recognized in isolated populations.
3. **Lactase Activity Declining After Age of 5 Years:** the most common form of lactose intolerance appears in the majority of world's population where lactase activity declines at around the age of 5 yrs; thereafter only low lactase levels persists. The occurrence of low lactase levels in patients older than 5yrs is most prominent in Asian, African, and all indigenous populations.

3.3 Secondary lactase deficiency:-

Secondary lactase deficiency is the result of mucosal injury. Diseases that can cause mucosal damage or villus flattening include infectious gastroenteritis (rotavirus is most common cause), parasitic infections (giardiasis), celiac disease, tropical sprue, radiation enteritis, drug induced enteritis and crohn's disease. Mucosal damage may be focal or patchy, making a diagnosis of lactase deficiency by lactase assay in biopsy sample difficult as lactase levels may vary in different samples.

3.4 Clinical Features:

1. Abdominal pain (may be periumbilical or lower quadrant)

2. Cramps or distention
3. Nausea
4. Flatulence
5. Diarrhoea or vomiting
6. Borborygmi

Different persons appear to have more or less sensitivity to the ingestion of lactose, variable degrees of abdominal distention and variable complaints. When ingested lactose stimulates an influx of water into the lumen of small intestine and the production of gas leads to distention of colon. Persons who have greater tolerance, report fewer symptoms. Thus, subjective contributions to clinical symptoms of lactose intolerance are important.

DUGDHA ASATMYATA:-

DugdhAsatmyata is the manifestation of lactose intolerance in Ayurveda. *DugdhAsatmyata* as a disease is mentioned in *AyurvedMahodadhi (SushenNighantu)*. There is no clear cut description of *DugdhAsatmyata* in other classics of Ayurved, but *AcharyaCharak* has clearly stated that every disease cannot be nomenclatured every time⁹. *AcharyaCharak* advised the followers of his school that any disease can be explained on the basis of fundamental principles of Ayurveda. So, a physician should try to comprehend the nature of the disease (*Dosha*), the site of manifestation and etiological factors and should then initiate the treatment¹⁰.

Aadhman has been mentioned as symptom of *DugdhAsatmyata* in *AyurvedMahodadhi (SushenNighantu)*. So by reviewing about *Aadhman* in classics of Ayurved, *Samprapti* (pathogenesis) of *DugdhAsatmyata* can be understood.

4.1Aadhman:-

4.1.1 CharakSamhita-

In *CharakSamhita*, *Aadhman* is not mentioned as a separate entity but the word has been discussed at several places.

Table-1 References of *Aadhman* in *CharakSamhita*

S. No.	Reference	Discussed as
1	C. S. Su. 7/8	c/f of <i>Pureesh Vega Vidharan</i> (holding the urge of faeces)
2	C. S. Su. 7/12	c/f of <i>Vaat Vega Vidharan</i> (holding the urge of flatus)
3	C. S. Su. 26/43	c/f of excess use of <i>Kashay Rasa</i> (Astringent)
4	C.S. Chi. 13/18	<i>Purvroop</i> (prodromal features) of <i>UdarRoga</i>
5	C.S. Chi. 13/21	General c/f of <i>UdarRoga</i>
6	C.S. Chi. 13/41	c/f of <i>Badhgudodar</i>
7	C.S. Chi. 14/11	c/f of <i>VatajArsh</i>
8	C.S. Chi. 15/63	c/f of <i>VatajGrahni</i>
9	C.S. Chi. 22/15	c/f of <i>AamajTrishna</i>
10	C.S. Chi. 26/7	c/f of <i>Udavart</i>
11	C.S. Chi. 28/26	c/f of <i>GudstithKupitVaat</i>
12	C.S. Si. 7/23	As one of <i>BastiVyapat</i>

4.1.2 SushrutSamhita-

In *SushrutSamhita*, *Aadhman* is described both as a symptom as well as a separate entity.

At *NidanSthan* as- when abdomen is distended excessively with gurgling sound and severe pain due to obstruction of *Vaat*, it is known as *Aadhman*, a severe disorder¹¹.

At *ChikitsaSthan*, in chapter *Vaman-VirechanVyapadChikitsaAdhyaya*, *AcharyaSushrut* has described *Aadhman* as one who take drugs, neither warm nor unctuous, when he has residue of undigested food, abundant *Doshas*, roughness and bowels almost filled with *Vaat*, it produces flatulence which causes retention of urine and faeces, bloated abdomen, breaking pain in sides, pricking pain in anus and bladder and anorexia, this is called as *Aadhman*. In this condition, the patient should be sudated and treated with warm pastes, suppositories, appetisers and enema¹².

AcharyaSushrut has also described line of treatment for *Aadhman* as *Aadhman* should be treated with *Aptarpan* (desaturation), fomentation by hand, *Phalavarti* (~suppositories), digestives, appetisers and enemas; after *Langhan* (producing lightness in the body), at the time of meals, foods processed with *Dhanyak* (*Coriandrumsativum*), *Jiraka* (*Cuminumcyminum*) etc.; which stimulate digestive fire should be given¹³.

Table 2 Other References of *Aadhman* in *SushrutSamhita*.

S. No.	Reference	Discussed as
1	S.S. Su. 12/34	c/f of <i>Dhoomophat</i>
2	S.S. Su. 33/7	<i>AsadhyaLakshan</i> (grave signs) of <i>Vaatvyadhi</i>
3	S.S. Chi. 2/16	c/f of <i>AamasyasthaRudhir</i>
4	S.S. Chi. 14/12	Indication for <i>Aanahvarti</i>
5	S.S. Chi. 24.62	Contraindication for <i>Snan</i>
6	S.S. Chi. 34/3	Complications due to <i>Vaman- Virechan</i>
7	S.S. Chi. 36/19	Complication due to <i>Mridu, SheetaBasti</i>
8	S.S. Chi. 36/22	Complication of <i>AtisnighdhaBasti</i>
9	S.S. Chi. 36/32	Complication of <i>Sheeta, AlpaOushadh, Heena-MatraBasti</i>
10	S.S. Ka. 3/36	c/f of <i>Vishpeet</i>
11	S.S. U. 39/30	c/f of <i>VatajJwar</i>
12	S.S. U. 40/9	Prodromal feature of <i>Atisar</i>
13	S.S. U. 40/26	c/f of <i>Aamatisar</i>
14	S.S. U. 42/118	c/f of <i>Parshvshool</i>
15	S.S. U. 42/143	c/f of <i>AvipakajShool</i>

4.1.3 *BhelSamhita*:-

In *BhelSamhita*, *Aadhman* is mentioned as one of the disease caused due to vitiation of *Vaat*¹⁴.

4.1.4 *MadhavNidan*:-

In *MadhavNidan*, description of *Aadhman* is found both as a symptom of various diseases and as a separate entity.

Madhav has followed *SushrutSamhita* exactly while describing *Aadhman* as a separate *Vaat* disease. Other references of *Aadhman* in *MadhavNidan* are as:

Table 3 References of *Aadhman* in *MadhavNidan*

S.No.	Reference	Discussed as
1	M.N. 2/9	c/f of <i>VatajJwar</i>
2	M.N. 3/5	Prodromal feature of <i>Atisar</i>
3	M.N. 6/12	c/f of <i>Vistabdhaajirna</i>
4	M.N. 12/16	c/f of <i>Shwas</i>
5	M.N. 18/19	c/f of <i>Panaajirna</i>
6	M.N. 22/12	c/f of vitiated <i>Vaat</i> in <i>Guda</i> and <i>Aamasya</i>
7	M.N. 26/17	c/f of <i>VatajParinamshool</i>
8	M.N. 28/4	Prodromal feature of <i>Gulma</i>
9	M.N. 30/6	c/f of <i>ShakritVighatajMutrakriccha</i>
10	M.N. 33/3	c/f of <i>UdarRoga</i>

Thus, on the basis of above facts, *SampraptiGhatak* of *DugdhaAasatmyata* can be inferred as follows-

<i>Dosha</i>	-	<i>KaphaavratVaat</i>
<i>Dushya</i>	-	<i>Rasa Dhatu</i>
<i>Agni</i>	-	<i>Jatharagni</i>
<i>Srotas</i>	-	<i>Mahasrotas</i>
<i>Srotodushti</i>	-	<i>Srotorodh</i>

4.2 Chikitsa Siddhanta of Dugdha Asatmyata:-

Acharya Sushrut has indicated about what should be the line of treatment of *Anukta Vyadhi* (disease not described in classics). According to *Acharya Sushrut*, no disease can manifest without vitiation of *Doshas*. Thus, line of treatment of *Anukta Vyadhi* (disease not described in classics) should be according to the causative *Dosha*¹⁵. By analyzing the above facts, the involved *Doshas* seem to be *Kaphaavritta Vaat* (*Vaat Dosha* obstructed by *Kapha Dosha*). *Vaat* is the main *Dosha* involved in the manifestation of *Aadhman*. *Vaat* can only be vitiated by two factors i.e. *Aavrana* (obstruction) and *Dhatu-Kshaya* (~emaciation). In case of *Dugdha Asatmyata*, intake of milk cannot be a cause of *Dhatu-Kshaya* (~emaciation). *Dugdha* as per Ayurveda aggravates *Kapha*. Thus, in case of *Dugdha Asatmyata*, *Aavarana* (obstruction) of *Vaat* by *Kapha* is the cause of pathology. *Acharya Charak* has given the line of treatment of *Kaphavritta Vaat* (*Vaat Dosha* obstructed by *Kapha Dosha*). According to *Acharya Charak*, drugs as well as food articles that pacifies *Kapha* and pushes the *Vaat* to its natural course should be used¹⁶.

4.3 Treatment of Dugdha Asatmyata as per Ayurveda Mahodadhi:-

Ayurveda Mahodadhi had advised to use *Nagar* (*Zingiber officinale* Rosc.) and *Pippali* (*Piper longum* Linn.) in case of *Dugdha Asatmyata*. The procedure described is - as compared to milk, mix half amount of water in milk and add *Nagar* and *Pippali* to the milk & boil till only milk is left behind¹⁷.

Nagar alleviates *Kapha* and *Vaat* due to its *Katu* (pungent) *Rasa* (taste) and *Ushna Guna* (hot in property) and by these same properties it increases *Pitta Dosha*. *Nagar* is *Deepan* (appetizer), *Pachan* (digestant), *Rochana* (increases desire for food and relish), *Grahi* (~anti-diarrhoeal) and *Shoolaprashamana* (analgesic)¹⁸. It's all these properties and actions prove its usefulness in *Dugdha Asatmyata*.

Pippali in *Sushka* (dry) stage due to *Katu* (pungent) *Rasa* (taste) it alleviates *Kapha*, with *Snigdha Guna* (unctuous in property) and *Madhur Vipaka* (sweet after bio-transformation) it alleviates *Vaat*¹⁹. Due to its *Kapha Vaat Shamaka* (alleviates both *Kapha* and *Vaat*), *Deepana* (appetizer), *Pachana* (digestant) and *Shoolaprashaman Karma* (analgesic action), *Pippali* is beneficial in case of *Dugdha Asatmyata*.

Thus, both the drugs break the chain of pathogenesis of *Dugdha Asatmyata*.

Discussion:-

Lactose intolerance is the condition which deprives the patient from nutrition. Milk is almost a complete food, especially the rich source of calcium. Patients having lactose intolerance are usually supplemented with calcium in the form of calcium carbonate or calcium gluconate²⁰. The concept of *Dugdha Asatmyata* elaborated with the help of guidelines described in various *Samhitas* provides a safer and cost effective management. As the patient is advised to drink milk with prescribed medication in a peculiar way, the nutrients and health benefits of milk are delivered to the patient.

Conclusion:-

Dugdha Asatmyata can be correlated with lactose intolerance. The clinical features of *Aadhman* are present in lactose intolerance along with diarrhea and flatulence. Diarrhea is not a feature of *Dugdha Asatmyata* but on the basis of prodromal symptoms of *Atisar* (diarrhea) in *Ayurveda*, it could be inferred that in *Ayurved Mahodadhi* fewer symptoms of lactose intolerance has been described under the heading *Dugdha Asatmyata* as subjective contributions are important in clinical symptoms of lactose intolerance. The reason may be the higher *Satva* (mental power) of people of era of *Ayurveda Mahodadhi* that leads to reporting of fewer symptoms. While modern medical science has included all the symptoms.

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