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Review Article

KSHEERALASAKA VIS-À-VIS COW'S MILK ALLERGY: A CRITICAL REVIEW

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ABSTRACT

Ksheeralasaka is a multi-system disease of the breast-fed child caused by *Sannipataja-stanya-dushti* (breast milk vitiated by all the *Tridoshas*). A proper understanding of the condition is not available and it is confused with lactose intolerance and cow's milk allergy. Hence a thorough review of *Ksheeralasaka* and its management in the light of Ayurvedic and modern principles is intended in this paper so that suitable therapies can be selected. *Ksheera* denotes breast milk and *Alasaka* is a type of *Ajeerna* (indigestion), a condition called Ama caused by *Agnimandya* or weak digestive /metabolic power. Thus *Ksheeralasaka* is *Ajeerna* or indigestion in the infant caused by intake of vitiated breast milk. *Ksheeralasaka* is most similar to non-IgE-mediated cow's milk protein allergy and is also comparable with food allergies caused by egg, peanuts, etc. Lactose intolerance and lactose overload can also co-occur with cow's milk protein allergy or food allergies. Being a disease of *Ama* and *Stanyadushti*, *Apatarpana* (depletion) in the form of *Sodhana* (purification) and *Stanyasodhana* (purification of breast milk) are the treatments to be adopted. *Langhana* or fasting is sufficient if *Ama* is mild, *Langhana* and *Pachana* (digestives) are needed if it is moderate and *Sodhana* (purification) is needed if severe. *Vamana* for mother and child purifies the gut and expels the allergens ingested. Breast milk purifiers and anti-diarrhoeals are judiciously advised for the mother and the child respectively. Advice regarding feeding practices can help reduce symptoms of lactose overload that may co-occur.

KEYWORDS: *Ksheeralasaka*, Cow's milk allergy, Lactose intolerance, *Stanya dushti*, *Ama*

INTRODUCTION

Ksheeralasaka is a multi-system disease of the breast-fed child. It is one among the four types of diseases caused by the vitiated breast milk in infants, caused by *Sannipathaja stanya dushti* [1] (or breast milk vitiated by all the three *Doshas*). A proper understanding of the condition is not available and it is confused with lactose intolerance and cow's milk allergy. Hence a thorough review of *Ksheeralasaka* and its management in the light of Ayurvedic and modern principles and its comparison with similar conditions is intended in this paper so that suitable therapies can be applied.

Materials and Methods

The classical *Ayurvedic* textbooks *Ashtanga Samgraha, Ashtanga Hridaya, Charaka Samhita, Susruta Samhita* and *Kasyapa Samhita* along with commentaries were referred for details on *Ksheeralasaka*. Pubmed, Google scholar and Google were searched for articles and studies on Cow's milk allergy, Lactose intolerance and Lactose overload. There was no article up to date on *Ksheeralasaka* in any of these research sites showing that little research has been done on this topic of *Ksheeralasaka* to date. A comparison was made on the causes, signs and symptoms of *Ksheeralasaka* with the causes, signs and symptoms of cow's milk allergy, lactose intolerance and lactose overload and a critical analysis done.

Etymology of the word *Ksheeralasaka*-

The term *Ksheeralasaka* is derived from two words '*Ksheera'* and '*Alasaka.' Ksheera* denotes breast milk and *Alasaka*[2] is a type of *Ajeerna* (indigestion), a condition called *Ama* caused by *Agnimandya* or weak digestive/metabolic power. Thus *Ksheeralasaka* is *Ajeerna* or indigestion in the infant caused by intake of vitiated breast milk. In broader terms it is indigestion due to milk or milk components. *Alasaka*, a form of indigestion is considered as an *Amapradosha vyadhi* or dyspepsia. According to the degree of *Ama* or *Agnimandya* associated, *Ajeerna* manifests as abdominal pain, distension, etc. where the food remains undigested like a foreign body causing colic or when severe it may manifest the symptoms of *Vishoochika*[3]or gastroenteritis involving vomiting and diarrhea. *Amapradoshaja*[4] diseases are caused due to eating excess quantity of

food which leads to indigestion causing *Ama* and vitiation of all the three *Doshas*.

Onset

It is a disease of breast fed babies- *Ksheerada*(the exclusively breast fed) and *Ksheera Annada* (partially breast fed baby on complementary feeds).

Causes-Being a disease due to *Sannipathaja stanya dushti* (breast milk vitiated by all the three *Doshas*) and *Amapradosha* (indigestion), the causes of *Ksheeralasaka* can be classified into (Table No. 1)-

i. The causes of *Stanya dushti*[5] (vitiation of breast milk)
ii. Causes of *Sannipatha dosha kopa*[6] (vitiation of all three *Doshas*) and
iii. Causes of *Ajeerna* or *Amapradosha*[7] (indigestion).

Table 1: The Causes of *Ksheeralasaka*

The causes of vitiation of breast milk	Causes of vitiation of all three *Doshas*	Causes of indigestion
• Foods that cause indigestion (*Ajeernasana*) • Unaccustomed foods and drinks (*Asatmya bhojana*) • Irregular dietary habits (*Vishamasana*) • Incompatible foods (*Viruddhasana*) • Over eating (*Atimatra ahara*) • Excessive dieting • Stale and slimy food • Excessively oily food • Jaggery • *Kheer/Payasam* • Thick gruels • Improperly formed yoghurt • Fat rich meat & fish, • Spoiled alcohol	• *Samkeerna*/complex diet • *Ajeerna*/indigestion • *Vishama-ahara*/ irregular dietary habits • *Virudha*/incompatible foods • *Adhyasana*/eating before the earlier food is digested • Intake of spoiled alcoholic beverages • Dried vegetables • Unripe *Mooli*/radish • Oil cakes • Mud eating • Barley • Beer • Rotten/ spoiled meat • Dried meat • Meat of lean animals (fatless) • *Anna parivartata*:-altered forms of foods • *Dhatu dushti*/vitiation of the body tissues • Northerly winds • *Graha-rogas*/ infectious diseases • *Gara-visha*/ artificial poisons • Spoiled foods	• Overeating leading to *Ama* or indigestion. • Foods which are disliked • Foods causing flatulence • Foods which are overcooked/uncooked • Foods which are heavy to digest • Foods which are dry • Very cold foods • Contaminated foods • Foods causing burning sensation during digestion • Excessively soaked or dried foods
• Physical exertion • Lack of sleep • Day-sleep especially after meals • Suppression of urges • Forceful elimination of urges • Lack of exercise • Trauma	• Mountaineering • Harmful planetary positions • Difficult labour • Improper care/ lack of proper care after delivery	• Excess hunger
• Anxiety • Mental stress	• *Asatmya indriya artha samyoga*/ improper use of	• Grief • Anger

• Anger	senses • *Papakarma* / sinful acts	

Samprapti

The improper diet and regimen of the mother leads to vitiation of the *Tridoshas* (bodily humors) and the *Rasa dhatu* (the first tissue formed from digested and absorbed food) of the mother. These *Doshas* pervade the *Ksheeravaha rasayanis*[8] (the milk ducts) and vitiate the breast milk. Any vitiation of the *Rasa dhatu* manifests within a short period of time, even a few hours in the breast milk as it is directly formed from the *Rasa dhatu*. The infant who feeds on the vitiated breast milk also develops *Ama* or indigestion which manifests as *Ksheeralasaka*.

Clinical features/signs and symptoms of *Ksheeralasaka*

Stanya pareeksha[9] or examination of the breast milk for its consistency, colour and miscibility in water is applicable in diseases like *Ksheeralasaka*, *Charmadala* (skin disease in breast fed), *Kamala* (jaundice), *Vibandha* (constipation), etc. in breast fed children to reveal the *Dosha* in the breast milk. The mother may herself be suffering from digestive or allergic diseases and should be enquired or examined regarding her disease. The clinical features of *Ksheeralasaka* in the child are (Table No. 2).

Table 2: Clinical Features in the Child [10]

Stool pattern	Urine	GIT	General symptoms	Integumentary
Diarrhea (*Atisara*) characterized by- Foul smelling undigested watery stools Broken, thin/ clear/ multi coloured stools *Salilopama*- watery & *Accha*- clear stools *Ama*- undigested stools *Durgandhi*- foul smelling stools *Nana varna*- multicoloured stools *Phenila*- frothy stools	*Peeta sweta mutrata*- Yellowish white urine	*Vishtambha*- gaseous distension *Trishna*-thirst - Dehydration *Chardi*- vomiting *Sushkodgara*- dry eructations *Aruchi*- loss of appetite	*Jwara*- Fever, *Vijrimbhika*- yawning (posturing), *Bhrama*- giddiness *Angabhanga*- pain in the body- tonic posturing *Vikshepa*/*Angavikshepa*- throwing out the limbs- irritability *Koojana*-moaning/ frequent crying episodes *Drishti-upaplava*- perturbed gaze *Swara saada*- feeble voice *Nanavedana*- multiple pain types/ associated diseases	*Ghrana akshi mukhapaka*- Ulceration of nose, eye and mouth

Ksheeralasaka is a type of indigestion and includes all the general symptoms of *Ajeerna*[11] or indigestion-namely, diarrhea or constipation, exhaustion, deranged *Vata*, distended abdomen, feeling of heaviness and dizziness. As it is caused by all the three *Doshas* it has the symptoms of *Vata, Pitta* and *Kapha ajeerna*[12] like *Shoola* (abdominal pain), *Bhrama* (vertigo), *Anaha* (abdominal distension), *Stambha* (constipation), *Jwara* (fever), *Atisara* (diarrhea), *Trishna* (dehydration), *Chardi* (vomiting), *Vaksanga* (obstructed voice), *Ksheetavana* (eructations), etc. It also manifests *Sannipathika graha*[13] (sepsis in neonates) symptoms similar to *Poothana* and *Revati graha rogas* when it becomes an *Atyaya* or emergency. The symptoms may range from mild changes in stools with varied colours to severe diarrhoeal disease with dehydration leading to emergency conditions.

Differential diagnosis

- The disease symptoms are also seen in *Balagraha rogas*[14] (sepsis in neonates) especially the *Poothana* and *Revati grahas.*[15]
- It is also seen associated with *Gudakuttaka* or napkin rashes. [16]
- *Charmadala* (skin disease in breast fed) caused by *Stanyadushti* (vitiation of breast milk) is explained by *Kasyapa* and also resembles *Ksheeralasaka.*[17]

Management

As *Ksheeralasaka* is caused by *Ama* (indigestion) and *Stanyadushti*, *Apatarpana* (depletion) in the form of *Sodhana* (purification) and *Stanyasodhana* (purification of breast milk) are the treatments to be adopted. The *Apatarpana* to be selected should be depending upon the severity of the disease in the child. *Langhana* or fasting if *Ama* is

mild, *Langhana* and *Pachana* (digestive tonics) if *Ama* is moderate and *Sodhana* (purification) if *Ama* is severe.[18]

- *Shodhana* (purificatory therapies)
- *Ama pachana* (increasing metabolism), *Agnideepana* (strengthening the digestive power).
- *Stanyasodhana* (purification of breast milk)
- *Samana* (pacification of *Doshas*)

Shodhana (purificatory measures)- *Vamana* (emesis) for mother and child[19] (ideal treatment for *ajeerna*) purifies the gut of the mother and the child and expels the allergens ingested. It also improves the *Agnibala* (digestive power) and thus helps in *Deepana* (improving digestion) and *Ama pachana* (metabolizing the undigested elements). In mild and moderate cases *Sodhana* may be restricted but in severe cases *Sodhana* is necessary for faster and effective relief from the symptoms.

Samsarjana karma or the diet followed after purificatory methods helps in *Agnideepana* after *Sodhana*. *Pathya* (congenial) diet subsides the symptoms fast and helps in faster healing of the gut of the baby. It results in *Rasa suddhi* (purification of the *Rasa-dhatu* or the tissue formed after digestion and absorption) in the mother and thereby acts as *Stanya sodhana* (purifier of breast milk).

Decoctions for breast milk purification and improving digestive power.[20]

i. *Mustha patha athivisha kushta katuka kwatha*
ii. *Rasna ajamoda priyangu bhadradaru kwatha*
iii. *Patha thejovathi punarnnava vrischikali kwatha*
iv. *Bhoonimba amritha kutaja phala sariba kwatha*
v. *Vachadi gana- stanyasodhana, ama atisara nasana*
vi. *Haridradi gana- stanyasodhana, ama atisara nasana*
vii. *Pathadi mahakashaya- stanya sodhana*
viii. *Jambu amra tinduka kapithapatra kwatha*.
ix. *Vilwa bhangasya kwatha*.
x. *Musthadi stanyasodhana kwatha*

Pathyas (congenial diet and regimen) for lactating mothers[21]

i. *Shali* and *Shashtika* rice- provides good quality carbohydrates, B vitamins and minerals and heals the gut.
ii. *Godhuma* (wheat), Barley, *Ragi*- effective in diarrhea, rich source of iron and other minerals.
iii. Green leafy vegetables cooked in oil/ghee- provides minerals, vitamins and fiber.
iv. *Mudga Masoora Kulatha* (lentil) soups, with *Amalaka trikatu saindhava* - provides good quality proteins.
v. Thin meat soups- helps regain lost weight, improves immunity.
vi. *Pathya (Hareetaki), Amalaka, Mridweeka, Dadima, Ghrita, Sarkkara, Kshoudra, Ksheera, Saindhava* are *Sada pathya* or suitable in all conditions.
vii. Water boiled with *Aswagandha, Amritha, Nagara, Kiratatiktaka- Amapachana.*
viii. Happiness, Cleanliness, Mild exercise, Regular sleep- helps in early recovery and prevention of infections.

***Ksheeralasaka* vis-à-vis Cow's milk allergy**

Ksheeralasaka is comparable with Cow's milk allergy which is the most common food allergy seen in breastfed infants[22] and can coincide with many other food allergies[23] which result from factors causing S*tanyadushti* and S*annipata dosha kopa*.

Cow's milk protein allergy (CMPA) is a hypersensitivity reaction to milk proteins mostly alpha S1- casein in cow's milk (also in any other animal milk).[24] It causes gastrointestinal, skin and respiratory symptoms and may even involve anaphylaxis which is a life threatening condition. It may be a manifestation of atopy.[25] It is lower in exclusively breastfed infants than in other infants and children. Mostly CMPA presents within the first 6 months of life.[26] Cow's milk ingested by mother and eliminated in her breast milk can also affect the infant. The common signs and symptoms of CMPA are given in Table No. 3.

The disease has two forms:

1. Antibody-mediated, and
2. Non-antibody mediated.

CMPA is most frequently caused by a non-IgE-mediated mechanism. Non- IgE mediated allergies tend to resolve by 2 years of age, while IgE-mediated allergies resolve by 3 years age.[27] The differences between IgE mediated and non-IgE mediated milk allergies are given in Table No. 4.

Table 3: Clinical Manifestations of Cow's Milk Allergy

GIT	Colicky pain- the most important presenting symptom[28], regurgitation, vomiting, diarrhea, constipation with or without perianal rash, blood and mucous in stool, mouth ulcers
Skin	Atopic dermatitis, swelling of lips or eye lids (angioedema), urticaria, allergic shiners
Respiratory tract	Rhinitis, otitis media, chronic cough, wheezing
General/ extra-intestinal manifestations of food allergies	Distress, irritability, frequent crying episodes Fatigue Nutritional deficiencies like iron deficiency anemia Joint pain/hypermobility, poor sleep, night sweats, headache, and bed wetting[29]

Diagnosis [30]

- Detailed history
- Physical examination
- Diagnostic elimination diets
- Skin prick tests
- Specific IgE measurements, and
- Oral food challenges.

The symptoms can range from mild to moderate to severe. [31] Severe form is anaphylaxis or laryngeal edema which is life threatening or that which causes failure to thrive or growth faltering. Usually one or more symptoms involving one or more organ systems, mainly the gastrointestinal tract and/or skin occur.

Table 4: Differences between Antibody Mediated and Non-Antibody Mediated Milk Allergies

Antibody-mediated allergy[32]	• Rapid in onset usually- takes minutes or within an hour to develop. • Vomiting, diarrhea, abdominal distress, rhinitis, wheezing, urticaria, angioedema or even anaphylaxis. • Mostly symptoms related to skin.
Non antibody mediated allergy[33]	• Mostly delayed reactions – after a few hours of ingestion - usually involve the gastrointestinal tract and/or skin. • Not detectable by allergy blood tests. • Harder to diagnose • Does not cause anaphylaxis. • Major symptoms are related to the gut and the skin. • Symptoms are atopic dermatitis, vomiting, colicky pain, gastro esophageal reflux, esophagitis and diarrhea in infants and constipation in older children, stomach ache, or flatulence. Infants may have blood or mucous in stools. • GIT disease may involve the whole gastrointestinal tract (enterocolitis), only small bowel (enteropathy) or only rectum and colon (proctitis and proctocolitis).[34]
Mixed IgE- and non-IgE-mediated reactions, involving humoral and/or cell-mediated mechanisms[35]	Manifest at the level of the skin and/or gastrointestinal tract. Include allergic eosinophilic gastrointestinal disorders and atopic dermatitis (eczema).

Differential diagnosis [36]

1. Lactose intolerance
2. Infantile colic
3. Metabolic disorders
4. Coeliac disease and other enteropathies,
5. Other food allergies such as hen's eggs, soy, wheat, etc) or other substances (such as animal dander, moulds, dust)
6. Malignancy
7. Infections (particularly gastrointestinal and urinary tract infections)
8. Sepsis.

Lactose intolerance

Lactose intolerance is the deficiency of lactase enzyme in the gut that leads to indigestion of lactose sugar present in milk. Undigested lactose passes through the gut and in the large intestine bacteria break it down to make acids and gases. Build-up of gas causes flatulence and osmotic diarrhoea. But lactose intolerance does not cause vomiting or eczema.

There are two types of lactose intolerance: primary and secondary.

Primary lactose intolerance[37] is a genetic condition in which the infant totally lacks lactase enzyme. It is a rare life threatening medical emergency. Neonates who have primary lactose intolerance develop severe illness during the first week. They need total removal of lactose from diet. A truly lactose-intolerant baby would fail to thrive from birth and show obvious symptoms of malabsorption and dehydration.

Secondary lactose intolerance occurs due to damage of brush border in gastrointestinal diseases like gastroenteritis and celiac disease, leading to lactase deficiency. But this condition resolves after the gut is healed. Secondary lactose intolerance caused by lactase deficiency usually develops after the age of three. Anything that damages the gut lining can cause secondary lactose intolerance. For example:[38]

- Gastroenteritis.
- Food intolerance or allergy - cows' milk, wheat, soy, egg or other food chemicals, in baby's or mother's diet.
- Parasitic infection such as giardiasis or cryptosporidiosis.
- Coeliac disease (intolerance to the gluten in wheat and some other grain products).
- Bowel surgery.

Cows' milk protein allergy is often confused with lactose intolerance because milk protein and lactose are present in same foods i.e; dairy products. Allergy can cause secondary intolerance to lactose and therefore can co-occur.

Diagnosis

- Hydrogen breath test[39]
- Tests for 'reducing sugars' in the stools.

Clinical manifestations

- Liquid, sometimes green, frothy stools
- Irritable baby who may be flatulent.

Differential diagnosis

- Lactose overload in babies which can mimic lactose intolerance.
- Other digestive problems, such as a food allergy.

Lactose overload

Breastfed babies may be irritable and pass loose frothy or green stools. It is because they are getting an overload of lactose due to feeding upon only foremilk which is richer in sugars than the hind milk which is richer in fats. [40] Switching sides often while feeding leads to baby getting only foremilk and this leads to faster transit time of the feeds in baby's gut ending up in lactose overload.[41] Lactose overload leads to relative lactase deficiency leading to symptoms of lactose intolerance. This can be managed by advising mothers to feed from the same breast until baby is also fed by hind milk, only then switch to the other breast so that the child gets enough fat which leads to slower gut transit and optimum amount of lactose for digestion. Fat in milk slows down digestion, so more lactose is broken down by the lactase and absorbed.[42] Bottle fed babies also may show signs of lactose overload. Also spacing the feeds for about 3 hours help in reducing lactose overload. If baby wants he should be put back to the empty breast.

Lactose intolerance and lactose overload are different from milk allergy. Milk allergy is a reaction by the body's immune system to the proteins in milk. But milk or food allergies can coincide with lactose overload and lactose intolerance due to improper feeding methods and damage to brush border of the gut.

Results and Discussion

Ksheeralasaka is more or less a gastrointestinal disease of the breast fed child caused by breast milk vitiated by improper diet and regimen of the mother. It also affects the integumentary, respiratory and renal systems. *Ksheeralasaka* is most similar to non- IgE mediated cow's milk protein allergy and is also comparable with food allergies caused by egg protein, peanuts, etc. The symptoms of secondary lactose intolerance due to damage to brush border and those of lactose overload due to faulty feeding practices can co-occur with cow's milk protein allergy or food allergies. The exact causes should be found out through elimination diets and correction of feeding practices and suitable diagnostic tests.

Ksheeralasaka is due to *Agnimandya* in the mother and the baby which results in the formation of *Ama* (undigested metabolites). *Rasadhatu* (first tissue formed after digestion and absorption) of the mother is vitiated which in turn vitiates the breast milk. Intake of vitiated breast milk causes *Agnimandya* (reduced digestive power) and accumulation of *Ama* undigested metabolites) in the baby which results in *Ajeerna* (indigestion). *Ksheeralasaka* is a form of *Ajeerna* with symptoms of

Alasaka and *Vishoochika*. The severity of the disease depends on the degree of *Ama* or *Agnimandya* which is involved and the treatment is also selected accordingly- *Langhana* or fasting in mild disease which helps in *Agnideepana* (improving digestion) and *Amapachana* (metabolizing the undigested metabolites) and thereby *Stanyasodhana*. In moderate disease *Langhana* (fasting) and *Pachana* (digestive tonics) are done with drugs which increase digestive and metabolic functions and thereby purify the *Rasadhatu* (first tissue formed after digestion and absorption) of the mother and also the breast milk. Same drugs can be given to the infant. Severe disease is manifested by all the symptoms of *Ksheeralasaka* and requires *Sodhana* or purificatory methods like emesis in the mother and the child along with *Deepana pachana* and *Stanyasodhana* decoctions in the mother and anti-diarrhoeal decoctions in the child. It is an emergency condition and requires prompt treatment. Correct advice regarding feeding practices can help in reducing the symptoms of lactose overload in mild cases which manifest with the symptoms of *Ksheeralasaka*.

A strict adherence to the *Pathya* (congenial diet and regimen) can aid in *Stanya sodhana* (purification of breast milk). *Vamana* (emesis) in the infant is less practiced by the physicians but can be followed in severe cases for immediate pacification of the allergic manifestations. Gastric aspiration may be tried otherwise. The decoctions for *Ksheeralasaka* are mostly *Deepana- pachana* (digestive), *Stanya sodhana* (purifiers of breast milk) and *Amaatisarahara* (anti-diarrhoeals with digestive capacity). The qualities of *Amapachana* (metabolizing the undigested metabolites) help in reducing the pathogenesis of the allergy in the mother and the child. Breast feeding is not contraindicated but allergens like dairy products or other foods, etc., should be avoided by the mother and the child and substitutes used. Other associated symptoms of the skin, respiratory and urinary systems must be managed with the medicines specific for those diseases. Emergency conditions due to anaphylaxis should be attended with care and managed with immediate anti-allergic treatment protocols. Dehydration due to severe diarrhea should be aptly managed with the protocol for management of acute diarrhea.

CONCLUSION

Ksheeralasaka is most similar to non- IgE mediated cow's milk protein allergy and is also comparable with food allergies caused by egg protein, peanuts, etc. The symptoms of secondary lactose intolerance due to damage to brush border and those of lactose overload due to faulty feeding practices can co-occur with cow's milk protein allergy or food allergies. A proper understanding of the causes, clinical features and management of *Ksheeralasaka* vis-a-vis cow's milk allergy, food allergies, lactose intolerance and lactose overload can help in development of a better treatment protocol and better medications for this multi-system disease of infancy and early childhood.

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REFERENCES

1. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, Uttara sthana chapter 2 sloka 22, 738p.
2. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, Sutrasthana chapter 8, sloka 6, 103p.
3. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, Sutrasthana, Chapter 8, sloka 5, 103p.
4. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, Sutrasthana Chapter 8, sloka 4, 102p.
5. Sengupta N, Sengupta B, Charaka Samhita Vol 3 1933, Varanasi, CK Sen and Company Ltd. Kolkata, Chikitsasthana chapter 30 verse89, 3498-9p.
6. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, 376p.
7. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, 107p.
8. Sharma PV, Ashtanga Samgraha of Vagbhata Uttara sthana Vol. III, 2013, Varanasi: Chaukhambha Sanskrit Sansthan, Chapter 2, sloka 17, 20p.
9. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, Uttarasthana Chapter 2, sloka 2, 736p.
10. Sharma PV, Ashtanga Samgraha of Vagbhata Uttara sthana Vol. III, 2013, Varanasi: Chaukhambha Sanskrit Sansthan, Chapter 2, sloka 17, 20p.
11. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, Sutrasthana chapter 8, sloka 30, 107p.
12. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, Sutrasthana chapter 8, sloka 9, 103p.

13. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, 746p.
14. Sharma H, Kasyap Samhita by Vriddha Jivaka with Vidyotini Hindi Commentary, Benares, Chaukhambha Sanskrit Series, 1953, Chikitsasthana chapter 4, verse 15-18, 100p.
15. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, Uttarasthana chapter 3, slokas 21&28, 746p.
16. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, Uttarasthana Chapter 2, verse 69-70, 742-3p.
17. Sharma H, Kasyap Samhita by Vriddha Jivaka with Vidyotini Hindi Commentary, Benares, Chaukhambha Sanskrit Series, 1953, Khilasthana chapter 15, verse 10, 331p.
18. Bhartiya S, Ashtanga Hridaya arthaat Vagbhat 2013 Mathura: Govardhan Pusthakalaya, 2013, Sutrasthana Chapter 8, verse 21, 106p.
19. Sharma PV, Ashtanga Samgraha of Vagbhata Uttara sthana Vol. III, 2013, Varanasi: Chaukhambha Sanskrit Sansthan, Chapter 2, sloka 18, 20p
20. Sharma PV, Ashtanga Samgraha of Vagbhata Uttara sthana Vol. III, 2013, Varanasi: Chaukhambha Sanskrit Sansthan, Chapter 2, sloka 18, 20p.
21. Sengupta N, Sengupta B, Charaka Samhita Vol 3 1933, Varanasi, CK Sen and Company Ltd. Kolkata, Chikitsasthana chapter 30 verses 95-96, 3502-3p.
22. Lozinsky AC, Meyer R, Anagnostou K, Dziubak R, Reeve K, Godwin H et al, Cow's Milk Protein Allergy from Diagnosis to Management: A Very Different Journey for General Practitioners and Parents, Children (Basel)2015 Sep; 2(3); 317-329, Published online 2015 July 21 https:// www.ncbi.nlm.nih.gov/pmc/articles/PMC4928770/
23. Vandenplas Y, Brueton M, Dupont C, Hill D, Isolauri E, Koletzko S, et al, Guidelines for the diagnosis and management of cow's milk protein allergy in infants, Arch Dis Child 2007 Oct; 92(10): 902–908 https://www.ncbi.nlm.nih.gov/pmc/articles/ PMC 2083222/
24. Lifschitz C, Szajewska H, Cow's milk allergy: evidence-based diagnosis and management for the practitioner Eur J Pediatr. 2015; 174: 141–150. Published online 2014 Sep 26 https:// www.ncbi.nlm.nih.gov/pmc/articles/PMC4298661/
25. Vandenplas Y, Brueton M, Dupont C, Hill D, Isolauri E, Koletzko S, et al, Guidelines for the diagnosis and management of cow's milk protein allergy in infants, Arch Dis Child 2007 Oct; 92(10): 902–908 https://www.ncbi.nlm.nih.Gov/pmc/articles/ PMC 2083222/
26. Lifschitz C, Szajewska H, Cow's milk allergy: evidence-based diagnosis and management for the practitioner Eur J Pediatr. 2015; 174: 141–150. Published online 2014 Sep 26 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4298661
27. Lozinsky AC, Meyer R, Anagnostou K, Dziubak R, Reeve K, Godwin H et al, Cow's Milk Protein Allergy from Diagnosis to Management: A Very Different Journey for General Practitioners and Parents, Children (Basel)2015 Sep; 2(3); 317-329, Published online 2015 July 21 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4928770
28. Lozinsky AC, Meyer R, Anagnostou K, Dziubak R, Reeve K, Godwin H et al, Cow's Milk Protein Allergy from Diagnosis to Management: A Very Different Journey for General Practitioners and Parents, Children (Basel)2015 Sep; 2(3); 317-329, Published online 2015 July 21 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4928770
29. Lifschitz C, Szajewska H, Cow's milk allergy: evidence-based diagnosis and management for the practitioner Eur J Pediatr. 2015; 174: 141–150. Published online 2014 Sep 26 https:// www.ncbi.nlm.nih.gov/pmc/articles/PMC4298661
30. Lifschitz C, Szajewska H, Cow's milk allergy: evidence-based diagnosis and management for the practitioner Eur J Pediatr. 2015; 174: 141–150. Published online 2014 Sep 26 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4298661
31. Vandenplas Y, Brueton M, Dupont C, Hill D, Isolauri E, Koletzko S, et al, Guidelines for the diagnosis and management of cow's milk protein allergy in infants, Arch Dis Child 2007 Oct; 92(10): 902–908 https://www.ncbi.nlm.nih.gov/pmc/articles/ PMC 2083222/
32. Lifschitz C, Szajewska H, Cow's milk allergy: evidence-based diagnosis and management for the practitioner Eur J Pediatr. 2015; 174: 141–150. Published online 2014 Sep 26 https:// www.ncbi.nlm.nih.gov/pmc/articles/PMC4298661/
33. Lifschitz C, Szajewska H, Cow's milk allergy: evidence-based diagnosis and management for the practitioner Eur J Pediatr. 2015; 174: 141–150. Published online 2014 Sep 26 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4298661/
34. Lifschitz C, Szajewska H, Cow's milk allergy: evidence-based diagnosis and management for the practitioner Eur J Pediatr. 2015; 174: 141–150. Published online 2014 Sep 26 https:// www.ncbi.nlm.nih.gov/pmc/articles/PMC4298661/
35. Lozinsky AC, Meyer R, Anagnostou K, Dziubak R, Reeve K, Godwin H et al, Cow's Milk Protein

Allergy from Diagnosis to Management: A Very Different Journey for General Practitioners and Parents, Children (Basel)2015 Sep; 2(3); 317-329, Published online 2015 July 21.

36. Vandenplas Y, Brueton M, Dupont C, Hill D, Isolauri E, Koletzko S, et al, Guidelines for the diagnosis and management of cow's milk protein allergy in infants, Arch Dis Child 2007 Oct; 92(10): 902–908 https://www.ncbi.nlm.nih.gov/pmc/articles/ PMC 2083222
37. Lactose intolerance and breastfeeding [homepage on the internet]. The breastfeeding network-Wendy Jones PhD.January 2015 [cited on June 8 2018] www.breastfeedingnetwork.org.uk
38. Anderson J, Austratlian Breastfeeding Association Reviewed August 2017, https://www. Breast feeding. asn.au/bf-info/lactose
39. Maffei H. V. L, Metz G, Bampoe V, Shiner M, Herman S, Brook C. G. D Lactose intolerance, detected by the hydrogen breath test, in infants and children with chronic diarrhea Arch Dis Child. 1977 Oct; 52(10): 766–771.
40. Rowena Bennett, author of 'Your Sleepless Baby: The Rescue Guide, https://idph.iowa.gov/ Portals /1/userfiles/48/Lactose%20overload.pdf
41. Vonlanthen M Lactose Intolerance, Diarrhea, and Allergy, *Breastfeeding Abstracts*, November 1998, Volume 18, Number 2, pp. 11-12.
42. Woolridge MW, Fisher C,Colic, "overfeeding", and symptoms of lactose malabsorption in the breast-fed baby: a possible artifact of feed management, Send to Lancet. 1988 Aug 13;2 (8607):382-4.

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