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## Review Article

### ROLE OF *TAKRA* (AYURVEDIC PROBIOTIC) IN THE MANAGEMENT OF GASTROINTESTINAL DISORDERS

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#### ABSTRACT

Gastrointestinal disorders can be grouped as functional gastrointestinal disorders (FGIDs) without an organic cause based on the systems and part of the Gastrointestinal (GI) system affected. Probiotics are called "good" or "helpful" bacterias as they help keep our gut healthy. probiotics have been extensively studied in detail in infectious gastroenteritis, antibiotic-associated diarrhea etc., gastrointestinal disorders. As the probiotics are the fermented products, *Takra* can be considered as an Ayurvedic probiotic which is being used since centuries in *Grahani* etc., *Rogas*. The present study evaluates the effect of the *Takra* or the buttermilk in the management of gastrointestinal disorders. A detailed study of *Takra* is shown having multiple benefits and very effective in increasing the good bacterias of the gastrointestinal system, and thereby decreasing the bad bacterias and play a very important role in maintenance of the gastrointestinal health. Consumption of *Takra*, an Ayurvedic probiotic in our daily meals helps to promote the intestinal immunity and prevention of the gastrointestinal disorders.

#### INTRODUCTION

Gastrointestinal (GI) symptoms carry heavy socio-economic consequences and are spread worldwide. Chronic digestive disease has a prevalence of 11% population suffering in United States<sup>[1]</sup> These diseases that include Functional dyspepsia (FD) or irritable bowel syndrome (IBS) etc functional gastrointestinal disorders (FGID) are characterized by symptoms of chronic or recurrent abdominal pain,<sup>[2]</sup> a change in bowel habits in the case of IBS and associated with either relief or exacerbation by defecation.<sup>[3]</sup>

The human gastrointestinal tract becomes rapidly colonized by microorganisms with a vast microbial population comprising tens of trillions of bacteria and hundreds of different species which is a complex ecosystem and sterile at birth. In this stage, the microbial content, while moving from the stomach to the colon, remains at the highest concentration in terms of density and diversity that increases exponentially.<sup>[4]</sup> These gut microbiota has the dominance of phyla Firmicutes and Bacteroidetes

and plays a significant role in human health and disease.<sup>[5-7]</sup> This microbiota makes our immune system strong by providing aid in nutrition and facilitating the smooth digestion.

A vital role is played by the diet in the intestinal disorders as this might be a relevant factor for symptoms in FGID that can change the gastrointestinal microbiome.<sup>[8]</sup> Probiotics has been included in the routine Indian diet that is considered very helpful for the GIT. Some of the examples of Probiotics are *Lactobacillus* and *Bifidobacterium* bacterias and few other single-celled organisms like yeasts e.g. *Saccharomyces boulardii*.<sup>[9]</sup> Food and Agricultural Organization/WHO has accepted probiotics as a nutraceutical or dietary supplement and defines it as the "live microorganisms which when administered in adequate amounts confer a health benefit on the host".<sup>[10]</sup>

An ancient medical science known as Ayurveda also considered as the science of life or the holistic science has a vast treasure of knowledge regarding *Pathya*

*apathya*, lifestyle, *Dinacharya*, *Rutucharya* etc., with the objective of both prevention and treatment of the mankind. Its distinguished nature lies in the unique perspective of disease management by uprooting. Ayurveda mentions buttermilk as *Takra*. Samhithas like *Susrutha samhita*, *Charaka samhita* and *ashtanga hridaya* of Ayurveda describes the advantages of *Takra* in *Grahani*, *Udara*, *Arsha* etc., disorders. According to Ayurveda, the intestinal disorders are caused due to the diminished *Agni* or *Amatwa*. *Takra* has *Agni deepana guna* and *Tridoshashamana guna*, and hence *Takra* or the buttermilk helps in clearing *Amatwa* from the *Koshta*. According to modern science intestinal disorders are commonly due to the bad bacterias or the harmful bacterias that are present in the gut flora of the intestines. [11]

The most consumed nourishing drink is *Takra* or the buttermilk that is prepared from curd (*Dadhi*) after churning it well with water. It is hot in potency, sweet and sour with astringency as subsidiary taste, easily digestible and causes dryness in body. It provides multiple health benefits such as it decreases edema, controls diarrhea, anemia, hemorrhoids, stimulates digestive fire, effective in case of minor poisoning and also splenomegaly. It is also helpful in intermittent fevers, vomiting, excessive salivation, anorexia, dysuria and excessive body fat. [12] Ayurveda, explains three types of buttermilk with their properties based on fat content such as fat-free, half fat and full fat which are to be consumed according to individual's power of digestion or based on the *Agni*. [13]

Researches show that probiotics have been extensively studied in infectious gastroenteritis, antibiotic-associated diarrhea (including CDAD), IBD and IBS etc., gastrointestinal diseases. [14-17] *Takra* as a probiotic contains several important vitamins and minerals, such as vitamin B12, riboflavin, calcium and phosphorus and is also low in fat and calories. [18] Fermented milk is a natural probiotic diet because of its friendly bacterias that are good for the intestine.

The gut microbiota has a significant role in human health and diseases. Certain illnesses can be reversed by favorable alterations of probiotics that contributes to the development of the dysbiosis of the intestinal ecosystem. This involves the three general mechanisms by which probiotics appear to exert their beneficial effects with important differences seen between probiotic species and strains such as Anti-microbial effects, Enhancement of mucosal barrier integrity and Immuno-modulation. [19]

Probiotics stimulate the production of anti-bodies, enhance the systemic activity of macrophages and increase the number of killer cells. And hence probiotics have the immuno- modulator effect in the human body thus improving the immune system. [20]

In addition, probiotics relieves constipation by regulating bowel movements, improves energy levels by enhancing B - complex synthesis, protects the vital organs like heart, kidney, lungs and liver with its antioxidant properties and ensures faster clinical response since it enhances drug absorption. Probiotics supports the immune system to battle infection, protects the urinary tract from infection, helps to heal peptic ulcer and prevents diarrhoea, gastroenteritis and other bowel problems. [21] In the present study, an effort has been made to evaluate the effect of an Ayurvedic probiotic, *Takra* the buttermilk and its effectiveness in the management of gastrointestinal disorders.

### **Takra in Ayurveda**

*Takra* is also found in Vedas where it is mentioned that God got immortality due to a pious drink (*Amrut*) in heaven and the humans have *Takra* (buttermilk) on the Earth to be immortal in the heaven as quoted in *Vaidyakiya Subhashit Sahityam*. [22] It is also mentioned that it was very difficult for *Shakra* (The King of God-Indra) to get the *Takra* (Buttermilk). [23]

Many varieties of buttermilk preparations and their methods are available around the world. It is a dietary product that is being used by many people around the world by centuries. In India, buttermilk is known as the Traditional Buttermilk which is prepared from churning the curd. [24]

### **Importance of Takra**

The importance of *Takra* (buttermilk) is mainly described by *Charaka* in *Charaka samhitha* under various context. *Charaka* has indicated *Takra* (buttermilk) in disorders such as, [25] *Snehavyapad* (complication due to overuse of oily substances), *Garavisha* (Low Potency Poison) *Shotha* (swelling) *Grahanidosha* (sprue), *Mutragraha* (difficulty in Micturation), *Udara* (ascites), *Aruchi* (anorexia), in *Udara* (ascites) etc. *Charak* has also mentioned that *Takra* (buttermilk) can be used in [26] *Mandagni* (Low Digestive Fire), *Gaurava* (heaviness in the body), *Arochaka* (anorexia), *Atisaara* (diarrhea) and *Vata-Kapha pradhan vyadhi*. In *Arsha* (piles) *Takra* (buttermilk) is indicated in *Vata-Kaphapradhan Arsha*. *Takra* (buttermilk) is also said as the best medicine for *Vata-Kapha pradhana*. [27]

### **Types of Takra**

*Takra* can be used basically in two forms as, *Sasneha takra* (buttermilk with cream) and *Ruksha Takra* (buttermilk without cream). It is also been divided on the basis of the cream content by the *Acharyas* as *Ruksha takra* (buttermilk), *Udhrutasneha* (buttermilk without cream), *Eashatsnigdha takra* (buttermilk), *Ardhodhrutasneha takra* (buttermilk), (half removed

cream), *Snigdha takra* (buttermilk), *Anudhruta takra* (buttermilk) and *Takra* (buttermilk with cream).<sup>[28]</sup>

#### **Takra Sevana - Method of Consumption of Takra**

Acharya Charaka has explained the specific time and the method for *Takra Sevana* (buttermilk consumption). This Buttermilk consumption should be done for 7 days, 10 days, 15 days, & 30 days only. Acharya has also warned not to use *Takra* (Buttermilk) after 30 days. It is also instructed that one should follow the pattern of *Takra Sevana*

(Buttermilk consumption) in increasing & decreasing order (*Utkrsha & Apakarsha*).

*Takra* consumed in this way said to bestow the following benefits such as: preserving the increased power, strengthens *Vata Dosha*, maintains *Bala* (strength), *Upachaya* (consistency of the body), *Varna* (maintains the color of skin) and also in the treatment of *Ashtodara*.

Acharya has also mentioned that *Takra* (buttermilk) can be used in combination with various *Dravyas* in different kinds of *Udara* as<sup>[29, 30, 31]</sup>

**Table 1: Dravyas with Takra**

|    |                        |                                                                                              |
|----|------------------------|----------------------------------------------------------------------------------------------|
| 1. | <i>Nichayaja Udara</i> | <i>Trikatu + Kshara + Lavana + Takra</i> (buttermilk)                                        |
| 2. | <i>Vataja Udara</i>    | <i>Pippali + Lavana + Takra</i> (buttermilk)                                                 |
| 3. | <i>Pittaja Udara</i>   | <i>Sharkara + Madhuka + Takra</i> (buttermilk)                                               |
| 4. | <i>Kaphaja Udara</i>   | <i>Yavani + Saindhava + Ajaji + Trikatu + Takra</i> (buttermilk)                             |
| 5. | <i>Pleehodara</i>      | <i>Madhu + Taila + Vacha + Shunthi + Shathava + Kushtha + Saindhava + Takra</i> (buttermilk) |
| 6. | <i>Jalodara</i>        | <i>Trikatu + Takra</i> (buttermilk)                                                          |
| 7. | <i>Badhhodara</i>      | <i>Hapusha + Yavani + Ajaji + Saindhava + Takra</i> (buttermilk)                             |
| 8. | <i>Chhidrodara</i>     | <i>Pippali + Kshaudra + Takra</i> (buttermilk)                                               |

#### **Advantages of Takra Consumption**

*Takra* has been proved to be very beneficial in *Grahanidosha* (sprue) and not limited just to *Udara* (ascites) and *Arsha* (piles). *Grahanidosha* (sprue) associated with *Agni Vikriti* and in this condition, *Takra* (buttermilk) plays the role of *Deepana* (stimulates the power of digestion), *Grahi* and *Laghavatva* property (lightness in the body) and thereby improves the *Grahani*.

By its *Tridoshghna guna*, *Takra* (buttermilk) is useful in *Pittadosha* with its *Madhura* (sweet) *Vipaka*, useful in *Kapha Dosha* by its *Kashaya rasa* (astringent taste), *Ushna Virya* (hot potency), *Vikativya* (relives stiffness & causes looseness of joints) and *Ruksha Guna* (dry Property) and is useful in *Vata dosha* by its *Snigdha guna* and *Madhura & Amla Rasa* (Sweet & Sour Taste).<sup>[32]</sup>

Originally, buttermilk was known as traditional buttermilk, the liquid that is left behind after churning butter out of cream. It refers to a number of dairy drinks which is easy to digest, has astringent properties and a sour taste. It helps improving digestion and alleviates the feeling of puffiness. It contains all the essential macronutrients and is a natural treatment for digestive disorders, gastrointestinal ailments, swelling, irritation, spleen maladies, anaemia and lack of appetite.<sup>[33]</sup>

In Gujarati and Urdu languages, it is known by the name Chaa, Mattha in Hindi-speaking north India, Mooru in Malayalam, Mor in Tamil, as taak or tak in

Marathi, as ghol in Bengali and majjige in Kannada and Telugu.<sup>[34]</sup>

#### **Buttermilk**

As Buttermilk is nutritive, contains all the elements necessary for a good balanced diet, and contains proteins, carbohydrates, minimal lipids, vitamins and essential enzymes, therefore it is considered as a complete food. 90 percent of buttermilk is water and its consumption in all daily diets helps to maintain the water balance of the body. As its contents are mostly combined with proteins, it is absorbed slowly from the intestines. It is always better to drink buttermilk than any other flavored drink or just plain water to obtain the health benefits. Fermented buttermilk is biologically very nutritive for the human body and tissues but sour to taste.<sup>[35]</sup>

Buttermilk has a tendency to lower down the effect of spicy food and soothes the lining of the stomach and intestines when consumed after a heavy meal. With buttermilk, the addition of ginger, cumin powder etc helps to relieve the irritation of the stomach that may have been caused due to the spicy food. Buttermilk has multiple health benefits and it is also instrumental in reducing body heat. It is well-liked by women, both pre- and post-menopausal, and alleviates many symptoms and diseases of women. For hot flashes, buttermilk is a great way to counterbalance the symptoms. People with a high metabolic rate and body temperature can avail

multiple benefits of buttermilk by reduce body heat. [35, 36]

### **Effect of *Takra* or Buttermilk in Gastrointestinal Disorders**

#### **Improves Digestion and Treatment of Stomach Ailments**

Buttermilk works against the bacteria of the stomach and aids in digestion by the presence of acid in it. All the additives added to buttermilk make it a very good digestive agent such as Ginger, pepper and cumin etc. These help in expelling the gas from the stomach as they possess the carminative property and consumption together provides cooling and digestive effect on the gastrointestinal tract. Regular consumption of buttermilk helps to prevent and treat most of the gastrointestinal conditions such as Irritable bowel syndrome, Stomach infections, Irregular bowel movements and Cancer of the colon etc. [35]

#### ***Takra* effective in Dehydration**

When buttermilk is combined with salt and spices, it becomes an effective medicine to prevent dehydration which is one of the best drinks to fight against the heat, loss of water from the body and is full of electrolytes. In summers, it is used as both a nourishing and a relishing drink as it provides the hydration with essential nutrients to the body. Therefore, Buttermilk reduces summer-related issues, general uneasiness etc. [35,36]

#### **Provides Nutrients but without the Fat**

Most of them believe that buttermilk will be full of fat and calories and hence its consumption leads to increased cholesterol. But it has less fat even than that of normal whole milk. Milk consist an important ingredient called calcium which is also is loaded with fats. Some people will be unable to consume milk either due to lactose intolerance or by refraining from consuming milk and this leads to calcium deficiency. These people can prevent this deficiency by consuming buttermilk. By this, the lactose gets transformed to lactic acid by the healthy bacteria present in buttermilk. Buttermilk provides calcium and nutritional supplements without the added calories, helps in slow bone loss or degeneration as one age advances. Considering all these benefits, buttermilk can be included into daily diet to protect and improve the gastrointestinal health. [35,36]

#### **As a source of Vitamins**

Buttermilk is a treasure house of vitamins such as Vitamin B complex and Vitamin D and its choice would be the best in overcoming the weakness and anemia caused by vitamin deficiency. Vitamin D present in buttermilk increases the immunity and strengthens the body, making it less susceptible to

infections. According to a study, one serving of buttermilk provides us the necessary 21 percent of the water content with nutrients. It also serves as a natural remedy for lowering and controlling blood cholesterol. Its constituents are very effective in keeping cholesterol under control. Ayurveda texts have extolled the virtues of consuming buttermilk for good health and has an extensive knowledge of the same. [35, 36, 37]

#### **Increases Immunity and Prevent Illnesses**

Buttermilk is said to be rich in lactic acid bacteria. This bacterium is capable of boosting the immune system and helping the body to fight off detrimental pathogens present in daily foods. Buttermilk plays a role in keeping illnesses away acting on bacteria. Due to its high amount of nutrients than the whole milk and also significantly lower fat content, it can be consumed without hesitation by weight reduction aspirants and those suffering from obesity and diabetes. Apart from these, Buttermilk helps keep blood pressure under control where, special type of proteins and elements such as calcium, potassium and magnesium present in the buttermilk helps to regulate and lowering blood pressure. As a probiotic, it is also effective in infections of the urinary tract and vaginal infections. In a study of candida infections in diabetic women, regular consumption of buttermilk has shown to reduce the infection and improve the health in general. [38]

Ayurveda has given prime importance to *Takra* due to its nutritional properties and because of which, it has been advocated both as diet as well as medicine. It is considered as a part of daily and a balanced diet which is wholesome for maintaining the good health. In Ayurveda, *Takra* is indicated in various disorders and mainly in gastrointestinal disorders as it facilitates proper digestion, absorption process and maintains the proper metabolism. Buttermilk is said to possess the properties of probiotics that helps in the growth of good bacteria and reduction of bad bacteria, thereby alleviating the disorders of gastrointestinal system. This buttermilk or the *Takra* can be considered as an Ayurvedic probiotic due its probiotic properties that are explained in Ayurvedic science and Modern nutrition has also acknowledged the properties and the effect of buttermilk in the gastrointestinal disorders by various research studies.

#### **Indications of *Takra* in combination with different Drugs**

Though *Takra* is considered as the best *Tridosahara*, when used with combination of different drugs, its *Doshahara* properties are enhanced. [39]

Table 2: Indications of Takra

|    |                                                                                                                                                                                         |                                                                                                                  |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 1. | In <i>Vataja</i> disorders                                                                                                                                                              | <i>Takra</i> along with <i>Saindhavalavana</i> (rock salt)                                                       |
| 2. | In <i>Pittaja</i> disorders                                                                                                                                                             | <i>Takra</i> along with <i>Sharkara</i> (sugar).                                                                 |
| 3. | In <i>Kaphaja</i> conditions                                                                                                                                                            | <i>Takra</i> with <i>Kshara</i> (alkali) and <i>Trikatu</i> ( <i>Pippali</i> , <i>Shunti</i> , <i>Maricha</i> ). |
| 4. | In <i>Grahani</i> , <i>Arshas</i> (haemorrhoids), <i>Atisara</i> (diarrhoea), <i>Rochana</i> , <i>Pustiprada</i> , <i>Balya</i> , <i>Bastishulavinashana</i> (mal absorption syndrome). | Along with <i>Hingu</i> (asafoetida), <i>Jeeraka</i> (cumin seeds), <i>Saindhavalavana</i> (rock salt)           |

### Contraindications for *Takrasevana*

Considered as *Tridoshashamaka* and *Amrutasamana*, *Takra* is also contraindicated in *Pitta* and *Vataja rogas*. Contraindications mentioned in classics include *Durbala*, *Murcha*, *Bhrama*, *Kshata* i.e., *Urakshata*, *Ushnakala* referring to *Greeshmartu*, *Daha* and *Raktapitta*. [36, 39, 40]

### DISCUSSION

Both Probiotics and Prebiotics in combination play a role in the growth and maintenance of good bacteria in the colon. Probiotics refers to the good bacteria living in the colon leading to the good health of the intestine. Prebiotics refers to the indigestible food which passes into the colon unabsorbed by the upper intestinal tract where they act as a medium for growth of the good bacteria.

Buttermilk has probiotic qualities that help to regulate the functions of gastrointestinal system as the probiotics introduce healthy bacteria into body, particularly into the digestive tract, where bacteria are essential for the breakdown and absorption of foods and their nutrients.

Factors like unhealthy food habit, repeated intake of antibiotics can decimate the healthy bacteria in the intestines, allowing unhealthy bacteria to flourish. A regular source of probiotics like buttermilk is important, as it will help to maintain normal gut flora to support optimal digestion and overall health. [41]

Ayurveda has given prime importance to *Takra* due to its nutritional properties and because of which, it has been advocated both as diet as well as medicine. It is considered as a part of daily and a balanced diet which is wholesome for maintaining the good health. In Ayurveda, *Takra* is indicated in various disorders and mainly in gastrointestinal disorders as it facilitates proper digestion, absorption process and maintains the proper metabolism. Buttermilk is said to possess the properties of probiotics that helps in the growth of good bacteria and reduction of bad bacteria, thereby alleviating the disorders of gastrointestinal system. This Buttermilk or the *Takra* can be considered as an Ayurvedic probiotic due its probiotic properties that are explained in Ayurvedic science and Modern nutrition has also acknowledged

the properties and the effect of buttermilk in the gastrointestinal disorders by various research studies.

Present study focuses on the multiple benefits of the *Takra*, an Ayurvedic probiotic that confers in the management of gastrointestinal disorders by promoting the good intestinal bacteria and reducing the bad bacteria.

### CONCLUSION

Ayurveda in its Samhithas stresses on the importance of Agni (Digestive Fire) and its disorders. As healthy *Agni* is required for the healthy body. *Agni* once deranged can lead to many gastrointestinal disorders. Acharyas have advised the consumption of *Takra* as a primary digestive aid in the diseases associated with the *Agni*. *Takra* can also be used as a *Pathya ahara* to maintain healthy status of the body. As the *Takra* or the buttermilk confers the same benefits as of probiotics, *Takra* can be considered as an Ayurvedic probiotic. Consumption of *Takra*, an Ayurvedic probiotic in our daily diet helps to promote the intestinal immunity, very effective in the management of gastrointestinal disorders and prevention of the same.

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