Original Research Article

Advantages and disadvantages of traditional fermentation of dairy products

Varsha B. Kharobe

Assistant Professor, Department of Dairy Science, Shivneri Mahavidyalaya, Shirur Anantpal, Dist. Latur, Maharashtra, INDIA.
Email: varsha.samangave@rediffmail.com

Abstract

Traditional dairy foods have always played a pivotal role in preservation of precious milk nutrients and promotion of its consumption among masses. Preservation of milk by fermentation is an old age technique. Fermented milks have assumed prominent position in diet and they are enjoyed everywhere in the world for their characteristics refreshing acid taste and excellent nutritive value. Since, significant proportion of milk has been used for manufacturing traditional dairy products all over the world. Fermentation of milk imparts acidic taste to milk, which is refreshing in worm climate. It is claimed that these products help in prevention of cardiovascular diseases by decreasing the blood cholesterol and colon cancer by activating the immune system. The practice of fermentation traces back to the old days and it's essentially a way to preserve food. These products can be manufactured easily utilizing the exciting facilities in the milk plant without investing on costly equipments. Dairy products like cheese, and butter are also considered to be traditional from global viewpoints. As such, fermented foods don't lose nutrients and they don't spoil all too easy. Yoghurt is one of the most popular fermented dairy products worldwide which has great consumer acceptability due to its health benefits other than its basic nutrition. The important fermented dairy product being produced and consumed in our country are, Dahi, Misti Dahi, Shrikhand, Lassi and Yoghurt. Foods of this nature usually have strong, pungent flavors. While fermented foods do offer certain health benefits, they do have some downsides.

Key Words: Fermentation, Dairy products

***Address for Correspondence:**
Dr. Varsha B. Kharobe, Assistant Professor, Department of Dairy Science, Shivneri Mahavidyalaya, Shirur Anantpal, Dist. Latur, Maharashtra, INDIA.
Email: varsha.samangave@rediffmail.com

Access this article online

Quick Response Code:

Website: www.statperson.com

Accessed Date: 10 March 2018

INTRODUCTION

Milk fermentation is one of the oldest methods practiced by the human beings to preserve milk with an extended shelf life. The exact origination of milk fermentation is not clear; however, it seems that it is dated back to the dawn of the civilization. Fermentation is a traditional form of preservation dating back thousands of years. Essentially, the bacteria naturally present on food begins breaking down sugars and starches in food. This produces lactic acid which halts the growth of 'bad' bacteria, so the food is preserved not rotted. Not only is the food preserved but it is made more healthful and nourishing than it was before. It's worth noting that each mouthful of fermented food can provide trillions of beneficial bacteria—far more than you can get from a probiotics supplement, which will typically provide you with colony-forming units in the billions. Starter cultures are used for the preparation of various fermented dairy products such as dahi, Lassi, Shrikhand, Yoghurt, Cheese etc. The primary function of starter culture is to develop desired amount of acidity in the products. The secondary effects of acid production include coagulation, expulsion of moisture, texture formation, and initiation of flavour production. When foods ferment, or decompose, certain waste products are produced by the bacteria which break down the food. One of these by products is alcohol. Many fermented foods, such as soy sauce, contain a significant amount of alcohol. Of course the alcohol in fermented foods is usually a small quantity but even small amounts of alcohol affect the cells of the body.

LIST OF ADVANTAGES OF FERMENTED FOODS

It helps restore proper bacteria balance in the intestines: Probiotics are mostly part of a group of bacteria that produces lactic acid and are found in fermented milk, yogurt and other foods that have undergone the fermentation process. The consuming such foods can also improve the bioavailability of nutrients, minimize the symptoms of lactose intolerance and reduce the prevalence of allergy in those who are susceptible.

It improves the immune system: Eating foods that have been fermented can make the intestine stronger and thus less at risk for intestinal illnesses. Kefir is easily digested but it also colonizes the intestines with microorganisms that help maintain a healthy immune response. Kefir has been used to treat tuberculosis and cancer, according to the United Nations University. 80% of your immune system resides in your gut. A healthy gut = a healthy immune system. Adding fermented foods to your diet will help ensure a healthy gut

Liver Protection: Fermented foods could help people with Hepatitis C and liver issues. Fermented brown rice might likewise help minimize the action of complimentary radicals that can harm the liver and cause or aggravate the development of hepatitis and other liver issues. Consuming fermented brown rice can assist minimize the risk of developing severe hepatitis.

- Fermenting things makes them taste great: like miso, kimchi, wine, and sourdough bread.
- Sourdough bread. Huge advantage.
- Fermentation allows energy production without oxygen, which can be exploited to make bread and some beverages, and allow humans to run for longer periods of time.
- Fermented food keeps a lot longer than fresh. That cabbage will go bad after a week, but the sauerkraut will keep for months.

MAKES FOOD MORE DIGESTIBLE

Because the bacteria predigest the food, the resulting product is easier to digest. If you have trouble digesting raw fruits and vegetables, fermentation may be helpful for you.

Chock full of good bacteria (probiotics): Some experts say that each small 1/2 cup serving of fermented foods can contain up to 10 trillion probiotic organisms. fermenting breaks down things that can be difficult to digest and makes some foods more nutritious: like sauerkraut (fermented cabbage) and miso (fermented soybeans)

Assist Your Intestinal Flora: Probiotics are live microbes that live in your intestinal tracts. Antibiotics, in addition to

An unhealthy diet, can kill these organisms, resulting in troubles such as vaginal infections and diarrhea and other gastrointestinal issues. One solution for this is to eat probiotic- rich fermented foods such as kefir – a sour yogurt-like drink – or certain sorts of yogurt.

It improves heart health: There are certain milk products that have undergone fermentation considered good for the heart. There is evidence to prove that fermented milk products can mildly decrease really high blood pressure (also known as hypertension).

Fermented foods have more nutrients: The bacteria in fermented foods produce more vitamins and nutrients as they digest the and Sugars particularly produce B vitamins and vitamin K2.

Increases flavor of foods: Fermentation adds a new depth of flavor to fermented foods. They are delicious.

Acid promotes growth of healthy bacteria in the gut: The lactic acid produced during fermentation helps healthy bacteria already present in your gut to proliferate. This leads to better gut health.

Helps curb sugar cravings: By adding fermented foods to your diet, you can limit, if not completely stop, your sugar cravings.

List of Disadvantages of Fermented Foods: Threat of Botulism Contamination: Foods fermented in your home position a danger of botulism contamination. In 2001, a botulism outbreak in an Alaskan village triggered 13 individuals to be hospitalized, with among them suffering heart attack and one requiring a tracheostomy. The episode was caused by consuming fermented beaver tail and paw, a traditional local delicacy. It is linked with the development of gastric cancer: The consumption of fermented foods can also boost the immune system as seen with kefir, an acidic beverage made by fermenting milk with grains. the effects of fermented and non-fermented soy food consumption on the risk of gastric cancer development. The study indicated that a high intake of fermented soy foods increased the risk of gastric cancer while a diet that was high in non-fermented soy foods reduced the risk of gastric cancer. Store-bought items lose beneficial bacteria: Fermented foods sold in many stores are processed differently than those that are traditionally fermented. They have too much acid and

have been pasteurized so they don't spoil right away. Research has also shown that fermented cheese products contain way too much salt than water. The process is mostly biochemical and hence the rate is governed by the organisms involved.

1. The waste products may not be easy to bear forever, which is why running for too long using this process causes buildup of a chemical in the muscles that cause fatigue, and can only be broken down while breathing.
2. Alcohol is great for inhibiting bacterial growth, but sometimes fermentation goes a little wild and you have to water down the mead you made because it tastes like you got it from the liquor store. Hardly healthy for daily use.
3. In humans, not all parts of the body ferment, which is why the brain passes out from a lack of oxygen before the muscles.
4. Finally, energy is a lot easier to produce when oxygen is involved.
5. Anaerobic conditions are needed along with very precise control of pH and other system conditions. Well designed Fermenters thus could be expensive on Capex.
6. In cases like yeast the maximum product concentration that the culture can bear is about 15% and no more.
7. Fermented foods are not only ineffective, but they possess harmful properties as well. We have already mentioned that many fermented foods are heavily salted or preserved with vinegar which makes them harmful. What are some of the other bad properties of these foods.

Side-Effects of Fermentation

1. When foods ferment, or decompose, certain waste products are produced by the bacteria which break down the food. One of these by products is alcohol. Many fermented foods, such as soy sauce, contain a significant amount of alcohol. the alcohol in fermented foods is usually a small quantity), but even small amounts of alcohol affect the cells of the body.
2. Another acid that results from fermentation *is lactic acid.* Lactic acid is a waste product. If you have ever exercised or worked harder than usual, you might notice a stiffness or soreness in your muscles. That stiffness results from a build up of lactic acid in the muscles. Now eating fermented foods that contain lactic acid may not make you "stiff," but does it seem intelligent to eat foods that are already high in waste by products.
3. Ammonia is another product of fermentation. Vinegar, in the form of *acetic acid,* also results from food fermentation.

Fermented Foods are low in Nutrition: The foods that are highest in nutrition are those which are eaten in their fresh, natural and unprocessed state. As soon as a food is tampered with in any way, nutrient loss results. The longer a food is held in storage, the lower it becomes in nutrition. Another reason given for eating fermented foods is that they are high in B-vitamins, or that they may somehow encourage the body to produce more Vitamin B12 in its intestines. Just the opposite may be true. According to research, the levels of Vitamin B12 may be *reduced* by fermented foods. Instead of adding nutritional benefits to the food, fermentation decreases some vitamin and mineral availability. The foods that are highest in nutrition are those which are eaten in their fresh, natural and unprocessed state. As soon as a food is tampered with in any way, nutrient loss results. The longer a food is held in storage, the lower it becomes in nutrition.

CONCLUSION

Fermentation was traditionally a process which enabled to preserve food and as such has been used for centuries until present. However nowadays, the main purpose of food fermentation is not to preserve, since other preservation techniques are known, but to produce a wide variety of fermentation products with specific taste, flavor, aroma and texture. Dairy products have promise as health-promoting foods for the prevention or amelioration of osteoporosis, sarcopenia, the metabolic syndrome, cardiovascular disease, cognitive decline, and digestive ailments. The bacteria in fermented dairy and vegetables can survive their perilous journey through the digestive tract. Once they are there, it's clear that they have at least some positive effects on human health, ranging from the enhanced nutritional contents of the foods themselves, to alleviation of inflammatory bowel conditions, to restoring normal gut microbiota after antibiotics, to enhancement of the immune system, and possibly even weight loss. Probiotics can turn many health benefits to the human, animals, and plants. Applications of probiotics hold many challenges. In addition to the viability and sensory acceptance, it must be kept in mind that strain selection, processing, and inoculation of starter cultures must be considered. probiotics throughout the storage period in addition to the recovery levels in the gastrointestinal tract are important factors. For this purpose, new studies must be carried out to: test ingredients, explore more options of media that have not yet been industrially utilized, reengineer products and processes, and show that lactose-intolerant and vegetarian consumers demand new nourishing and palatable probiotic products.

REFERENCES

1. Outlines of Dairy Technology by Sukumar De.
2. Traditional products in Indian Dairying.
3. Aneja, R.P., Vyas, M.N., Nanda, K. and Thareja, V.K. 1977. Development of an Industrial process for the manufacture of shrikhand. J. Food Sci. Technology.
4. Kanawjia, S.K., 2006. Developments in the manufacture of lassi. In: Developments in Traditional Dairy Products.
5. International Journal of Scientific and Research Publications, Volume 4, Issue 4, April 2014.
6. James M. J. (2000). Fermentation and Fermented Dairy Products.
7. Milk and it's properties by S. M. Srivastava.
8. Latha sabikhi, 2006. Developments in Traditional Dairy Products.

Source of Support: None Declared
Conflict of Interest: None Declared