Incredibility of Revitalizing Kambucha Tea for Fascinating Hilarity & Vivacious Demeanor

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A B S T R A C T
Kombucha is a beverage packed with mineral-replenishing electrolytes. It’s an energizing tonic, which makes it a healthy alternative to popular drinks that are often packed with caffeine and refined sugar. Kombucha contains regenerative enzymes, bacteria and organic macromolecules that support intestinal flora stimulate the immune system and balance the endocrine system. This supports and increases the body’s natural ability to heal itself. It’s the secret to longevity, health, merriment and virility. It aids strengthening the immune system; cell detoxification, balance of the intestinal flora. All of which can help with: digestive problems (including obesity and lack of appetite), pH-balance, high blood-pressure; rheumatisms and arthritis; stress (work-related & other), chronic fatigue syndrome, insomnia, psoriasis, eczema, allergies, abscesses, ulcers, hair-loss; PMS (pre-menstrual syndrome) and irritability! The Kombucha culture is a mix of a variety of yeasts (similar to those used in beer) and bacteria (similar to those used in yogurt) and a gelatinous cake called the symbiot. This culture acts like a veritable biochemical storehouse, transforming simple sugars into a multitude of highly beneficial substances viz. several types of enzymes and good bacteria; organic acids (acetic, lactic, D-gluconic, citric, usnic, malic, butyric, oxalic and some others); vitamins C, B1, B2, B3, B6, B12, amino acids; antioxidants, polyphenols, and < 0.5 % alcohol.

Keywords: Scoby, Fermentation, Osmophillic yeast strains, Gluconic acid, Prebiotics, AAB, Antioxidants, Polyphenols

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Kombucha is an ancient drink, made for centuries and celebrated for its many health benefits. Kombucha can be traced back to ancient China where it was worshipped as a remedy for immortality. According to lore, the beverage was introduced to Japan by a Korean physician named Dr. Kombu around 415 AD who gave the bacteria-laden liquid to a Japanese emperor as a healing tonic. Throughout the years, the “Manchurian” made its way into Russia, Germany, India and other parts of the world propelled by its purported curative properties and mystical appeal. It is said to have originated in China during the Tsin dynasty, where it was nicknamed the “the remedy for immortality.” With the extension of the trade routes it spread to Russia and India through travelers and traders. Kombucha resurfaced in Japan after a Japanese visitor to Kargasok (Russia) found this fermented drink responsible for their astonishing health, longevity and well-being. Kombucha is a fermented drink made with tea, sugar, bacteria and yeast. Although it's sometimes referred to as kombucha mushroom, kombucha is not a mushroom it's a colony of bacteria and yeast. Kombucha is made from fermented sweet that is usually consumed for its purported health properties. made from a mushroom, but kombucha tea starts with cultured colony of bacteria and yeast that resembles a wide, flat, rubbery fungus. In the kombucha brewing arena, this starter colony is known as "the mother." Adding sugar and green or black tea to the mother, and about a week later the fermented results in a clear, amber, slightly effervescent liquid with a large number of organic acids the American Cancer Society lists ethyl acetate, acetic acid, and lactate -- as well as some B vitamins and alcohol. Some of the positive impacts ascribed to kombucha include improved memory, reduced symptoms and signs of premenstrual syndrome, rheumatism, aging, anorexia, AIDS, cancer and hypertension, and improved T-cell counts, immune system and metabolism. Some of these purported improvements actually might be attributable to the tea that's used for fermentation of the culture, rather than properties of the "mother" itself [1-3].

Kombucha uses a combination of yeast and bacterial cultures to produce an end product that is only slightly alcoholic and mildly acidic. Because most of the alcohol is further fermented into acetic acid, kombucha is considered a non-alcoholic beverage. Many claims regarding kombucha's effect on mental and physical health have been made, although none have been proven scientifically. Many claims surround kombucha's effect on digestive health because of the bacterial and enzyme content. Every batch of kombucha will have a slightly different content, although International Journal of Research in Pharmacy and Life Sciences

1. Introduction
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is made by adding the colony to sugar and allowing the mix to ferment. The resulting liquid contains vinegar, B vitamins and a number of other chemical compounds. The ingredients used to produce kombucha consist of a probiotic culture, water and sugar (Figure 1).
The should be caffeinated, as the Kombucha derives nourishment from the caffeine. This reduces the amount of caffeine present in the finished brew. As most herbal s are decaffeinated, herbal is not generally used. Sugar is the primary energy source for the Kombucha culture during fermentation. White sugar, preferably organic, is recommended, although brown sugar and molasses may also be used. Due to its antimicrobial properties, honey may harm the culture and is generally not used. During the 2-week period of fermentation, the Kombucha culture metabolizes the sugar to produce a variety of organic acids and CO₂. These provide the carbonation and a tart flavor that many Kombucha aficionados enjoy. The Kombucha beverage contains little sugar, as the sugar is consumed by the fermentation process. The beverage contains some alcohol as a result of fermentation. Longer brew times reduce both the sugar and alcohol content [4]. The drink is fairly acidic with high levels of lactic acid and other acids, so experts advise moderation. Kombucha is a mysterious concoction made of live bacteria and yeast and it's becoming all the rage among the same health-seeking crowd that just last year was guzzling pomegranate and acai berry juices. Some call it “mushroom .” although there are no real mushrooms in it, just some slimy sludge floating near the bottom of the bottle. Kombucha is the latest elixir to elicit claims of a stunning array of health benefits, everything from improving digestion and immunity to lowering cholesterol and fighting cancer [5-7].

Kombucha helps to relieve PMS. B vitamins help to break down and flush out excess estrogen from the body (a condition called estrogen dominance). This can help to reduce PMS symptoms. Part of the reason for kombucha's shaky claims might be that, like some other nutritional medicinals, it is technically classified as a nutritional supplement. As with any organics, there have been reports of allergic reactions, as well as toxicity to the lungs, liver, and blood clotting factors. Another concern about kombucha is its high potential for contamination with pathogenic micro-organisms such as aspergillus and anthrax. The basic safety questions, such as high contamination risks, are what cause health practitioners to stop short of recommending kombucha, especially for children. Because of the risk for contamination, its acidic nature, its caffeine and alcohol content. If immune support or B vitamin supplementation is the goals, there are safer ways of achieving them. Kombucha generally is not the best for children, especially those younger than 7. A child’s digestive system is immature and the acids, sugars, caffeine, alcohols and bacteria found in the various brews may be too much for the young gut to handle. Frequently, too, kombucha is brewed with honey, which should not be given to babies under the age of 12 months due to the botulism risk. The cellologic pennicle formed by Acetobacter xylinium during the fermentation of the beverage has been used as a temporary skin substitute on burns and in other skin injuries. In a recent study, the antibiotic activity of kambucha against Helicopeter pylori, Escherichia coli, Staphylococcus aureus and Agrobacterium tumefaciens mainly related to the acetic acid produced during the fermentation. [4] The ancient drink ‘Kombucha’ has been prepared since centuries. It originated in China during the reign of the Tsin dynasty. Because of its manifold health benefits it was named the “elixir of life”, meaning the one that elongates life. Later it became popular in Russia and the United States. Kombucha tea has loads of organic acids that improve the functioning of the organs, especially the pancreas, kidneys and liver. Warm kombucha tea should be consumed before bedtime so that it can work its magic overnight. It also contains glucaric acid that helps the immune system fight cancer cells in the body. Once the system is cleansed through frequent urination, the organs can function properly and focus on more important activities. This prepares the body to fight against diseases and infections more effectively. Clogs and blockages are cleared with regular intake of Kombucha tea. This makes the body more active and the metabolic processes in the body are triggered. Glucosamine is one of the main ingredients of Kombucha tea. This is helpful in strengthening the bones and joints. It provides the joints with moisture, flexibility and lubrication, and relieves a person of serious joint problems and inflammation. Weight loss happens in more than one way with the use of Kombucha tea. Firstly, since overall functioning is improved one feels healthier and the effectiveness of exercising is increased. Secondly, it detoxifies the system and burns unhealthy fats. Kombucha tea is a good healer for eczema. It clears the skin internally and relieves it from problems like acne and pimples. The tea makes the skin look younger and brings out an inner glow. Skin problems can also be traced back to stomach problems that
Kombucha tea takes care of. Tea, coffee, sodas and energy drinks are in major demand amongst the youth these days. These are meant to provide an energy boost. Kombucha tea is a natural and safe way to boost up energy levels in the body. It keeps your system energized and active at all times. PMS is common in women during the menstrual period. Kombucha tea benefits in clearing periods and getting rid of these symptoms. For those who take the tea regularly, the symptoms reduce over time. Kombucha tea is very rich in

2. Probiotic Content
Main ingredient found in all fermented foods and beverages are probiotics which are beneficial bacteria necessary for adequate digestion and absorption of nutrients. They are viable microorganisms that improve gut microflora by secreting enzymes, organic acids, vitamins, and nontoxic anti-bacterial substances once ingested. Kombucha also provides a source of prebiotics, which helps fuel the growth of helpful microorganisms in your digestive track. The black and green in kombucha also offers some beneficial antioxidants and polyphenols — although you could get the same with a simple bag. The drinks do contain sugar, but not nearly as much as some sweetened s, fruit drinks and sodas. It’s warned about this wonder drink that too much can be toxic for people with weak immune systems. Some reports have linked kombucha with serious complications, including liver damage, toxicity and metabolic acidosis — an abnormal increase of acid levels in body fluids. Other problems can include allergic reactions and nausea. Probiotics have also been shown to improve metabolism and treat antibiotic associated symptoms such as diarrhea. In a recent study, alternative diets such as probiotics, green extract and Kombucha were fed to broiler chickens to measure the effects of growth and immunity. The chickens fed with Kombucha showed an increase in protein digestibility. Conclusively, adding Kombucha (20% concentration) to wet wheat-based diets improved broiler performance and had a growth-promoting effect. Probiotic diets also resulted in enhanced growth and performance, but to a lesser extent [6-10].

3. Preparation Mode
Kambucha is the result of a strong symbiotic relationship between bacteria (viz. Acetobacter xylinium; A. xylinoides; A. aceti; A. pasteurianus; Bacterium gluconicum) and osmophillic yeast strains (Schizosaccharomyces pombe; Saccharomycodes ludwigii; Saccharomyces cerevisiae; Kloekkera apiculata, Zygosaccharimyces bailii; Brettananomyces bruxellensis; B. lambicus; B. custersii; Candida sp. & Pichia sp.). Kombucha can be made from any variety of teas, most often black, green, oolong, or yerbe mate. The beverage is sweetened with sugar to provide fuel for fermentation. Honey, which has antimicrobial properties is generally not suitable for making kombucha (Fig. 2a,b,c.). A bacterial “mother,” or culture starter, is added to the beverage to begin fermentation. The brew is left to ferment for 1 or 2 weeks, during which time the culture grows and ferments within the liquid. The liquid is then tapped and consumed. The yeast in the culture ferments the sugar into alcohol, which is then further fermented by the bacteria into acetic acid. The alcohol level in kombucha generally stays below 0.5%, which is considered nonalcoholic by beverage standards. The acetic acid production usually keeps the acidity of the beverage around a pH of 3.0 [9-11].
yeast fermentation. Optimum temperature of a kombucha ferment is 74°F - 84°F (21°C – 29°C). Below 70°F produces inconsistent brews and diminishes the Acetobacter. Lactobacillus and some yeasts may thrive even in the Low 60's but the gluconic acid will not be produced. Low temperatures also give an opportunity for wild and airborne microbes to take hold and alter the ferment. Low temperatures always takes longer and produce a lighter color and taste ferment. Higher temperatures produce faster ferments and a darker thicker taste [8-11].

4. Conclusion
One of kombucha’s greatest health benefits is its ability to detox the body. It is rich in many of the enzymes and bacterial acids your body produces and/or uses to detox your system, thus reducing your pancreatic load and easing the burden on your liver. Kombucha is very high in glucaric acid, and recent studies have shown that glucaric acid helps prevent cancer. Kombucha contains glucosamines, a strong preventive and treatment all forms of arthritis. Glucosamines increase synovial hyaluronic acid production. Hyaluronic acid functions physiologically to aid preservation of cartilage structure and prevent arthritic pain, with relief comparable to NSAIDs (non-steroidal anti-inflammatory drugs) and advantage over glucocorticoids. Hyaluronic acid enables connective tissue to bind moisture thousands of times its weight and maintains tissue structure, moisture, lubrication and flexibility and lessens free radical damage, while associated collagen retards and reduces wrinkles. Probiotics are good for gut, and good for immunity. Kombucha has a strong anti-microbial property along with its antioxidant potential which help to strengthen the organism by the kidney or the intestines. Most properties of kombucha are attributed to the acid composition of the beverage. Its detoxifying property is presumably due to the capacity of gluconic acid to bind to toxin molecules and to increase their excretion from the organism by the intestines and in turn by kidneys providing the relief in gout, rheumatism, arthritis and kidney stones. Kombucha has probiotics and enzymes that promote detoxification. Kombucha contains a risk of contamination since they are most often made in homes rather than in a sterilized environment. Side effects of kombucha include an upset stomach and allergic reactions.

5. References


