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Stefan R. Becker

Kombucha

Natural Power from the Treasure of Eastern Experience

Kombucha is a fermented tea drink which has been handed down as a folk and home remedy by the Asian Zen way of life. It has been acclaimed for millennia in many parts of the world for its positive health effects. Kombucha is a natural product obtained by natural fermentation. On a nutrient solution of black, green or herbal tea, a complex of yeast and bacteria called the "Kombucha mushroom" metabolises the added sugar during fermentation, and in the process produces a wide variety of health-promoting substances [1,2,3,5] which are released into the nutrient solution: enzymes, for example, improve intestinal function, lactobacilli promote the natural balance of the intestinal flora, thus supporting the body's immune defenses. Moreover, the high content of yeast positively affects the physiological processes of the skin [3,4].

More than 2,000 years ago, in the Chinese empire of the Tsin- Dynasty (221 BC), the natural product of Kombucha was already known as a proven and tested folk medicine. People attributed to it vitality and healing effects, e.g. for chronic stomach ailments. The Asian Zen philosophy relied on the detoxifying effect of this fermented tea drink to achieve purity and balance of body and soul. Chinese tradition finally regarded Kombucha even as a path to 'immortality', meaning a long and healthy life full of vitality and well-being until old age.

Origin and history

Medical history tells of a wandering Korean physician named KOMBU, who in 414 AD cured Japanese emperor INKYO from a chronic stomach ailment (gastritis). Since that time, the healing drink he brewed for the treatment of the monarch has carried his name: Kombucha simply means "tea made by Kombu"[5].

This health elixir spread quickly across Japan, India and Russia, and up to World War II it was regarded all over Eastern Europe as a people's medicine for metabolic diseases and to regulate intestinal functions, used almost in every household. During the war the health boosting tea drink fell into oblivion, because the necessary ingredients were hard to obtain in most places. However, already in the 1960s the tea mushroom was for sale again under the legally protected name of "Mo-Gû" in all pharmacies in German Franconia as an aid against constipation but also because of its detoxifying effect on pathogenic intestinal bacteria.

In recent years, renowned news magazines reported a veritabe "Kombucha cult" across the US West Coast. People were convinced of the positive effects the tea fungus beverage was said to have on well-being, appearance and health. This side of of the Atlantic, Tyrolean naturopath FERDINAND STOCK developed a method based on herbal tea for a very natural industrial production of Kombucha.

Manufacturing process

The production of Kombucha is based on a procedure that has been used for millennia. A unique natural symbiosis of yeast and lactic acid bacteria is added to a base of black, green or herbal tea. During the fermentation process the added sugar is metabolized, and in the course of several days, valuable metabolic substances are released by the microorganisms [1,2,6], accounting for the specific effects of the beverage.

A careful thermal treatment in the industrial production process guarantees the greatest possible freedom from germs and thus stability and freshness of the product.

At the same time, the beneficial health effects of the drink are retained. In the case of domestic production of Kombucha, however, contamination and bacterial infections may occur, which can greatly reduce the positive effect of the drink and even at times harm the body. Irrespective of that, ingredients, colour and taste of this natural beverage are subject to natural variations.

Components and effects

The fermented tea drink (one milliliter of Kombucha contains around 10 million mostly young and vital yeast cells) provides many elements that are biologically valuable for the organism: organic acids, such as glucuronic acid, dextrorotatory lactic acid and acetic acid, polysaccharides, and enzymes, vitamins and minerals [3]. The wealth of dextrorotatory lactic acid in Kombucha, for example, supports numerous physiological processes in the intestinal area. It promotes blood circulation, activates liver metabolism and stimulates digestion. It substantially protects the digestive system against pathogenic

bacteria and viruses, and promotes a balanced intestinal flora [4]. Acetic acid in Kombucha revitalizes and stimulates the entire metabolism. It aids digestion and assists in fat catabolism and protein degradation. The enzymes contained in Kombucha help an overloaded digestive system in breaking down food substances. They also act as regulating agents in many metabolic processes. [3]. Polysaccharides are high-quality fuels that strengthen the immune system as well as the connective tissue [1]. Glucoronic acid with its detoxifying effect helps to eliminate harmful metabolic products and exogenous substances, such as nicotine, drugs and environmental toxins such as mercury and lead [4]. Vitamins, minerals, essential aminoacids and and enzymes have a positive effect on the skin's metabolism, they stimulate the immune system [7] and assist the body in its growth and development for example of bones and teeth [3].

Immune system, intestines and skin

The stimulating effect of Kombucha on the immune system is evident e.g. in the activation of the interleukin-2-system and its regulatory effect on the blood picture in patients with lymphocytosis or lymphopenia [13]. The lactobacilli contained in Kombucha support the intestinal defense system which acts as a shield against foreign micro-organisms and pathogenic intestinal viruses. [9]. The immune stimulation can have anti-infectious effects and, for example, prevent the repeated occurance of intestinal mykosis. The fact that the intake of yeast supplements can reduce skin diseases such as acne is attributed to the same mechanism10].
The cause of many skin problems is very often rooted in metabolic malfunction, poor digestion and an imbalance in the intestinal flora. If the intestinal flora is out of balance, the exchange of substances with the organism via the intestinal mucosa is inhibited. A variety of diseases, for example skin ailments that are difficult to treat such as acne or psoriasis, more often than not go back to these causes. [8]. Even allergic skin reactions, for example hypersensitivity to certain foods such as fish, nuts or cheese, as well as to drugs or substances in our environment (like pollen, jewelry or cleaning agents) can be attributed to poor digestion and its influence on the immune system [3].

Health and wellbeing without side effects

In Asia, the fermented Kombucha drink has been used for more than 2,000 years to cleanse body and soul and to enhance well-being, health and beauty. While veritable miracles were attributed to this tea in ancient times, today the effect of its components can be evaluated more precisely. (table 1).

Today we know that the active ingredients of this tea drink

- promote intestinal function
- build and regulate a healthy intestinal flora
- activate and strengthen the defenses of the body's immune system
- improve the physiology of the skin
- regulate the metabolism and vitalize the whole organism
- cleanse and detoxify the body [2,4].

So far no harmful side effects of this tea beverage have been found. In general, it is very well tolerated [3]. Kombucha should be consumed preventively with a certain regularity, but not in massive amounts. As a general guideline, some 3/8 liters throughout the day are recommended. [1]. Kombucha is safe even for diabetics. While white sugar is needed to start the fermentation and to enable the mushroom to grow, it will soon be broken up into glucose and fructose. Glucose is used up quickly in the fermentation process, so that only fructose remains as a residual sugar, which can be consumed by diabetics in moderation without harm [1].

Children and persons reacting with palpitations of the heart to black or green tea can use Kombucha on a herbal or fruit tea base. Impurities of the skin that may at times appear after the first consumption of Kombucha (due to a natural detoxification via the skin), tend to disappear after a short time. Also, an increased urge to urinate only indicates that the body is eliminating more metabolic waste products [3].

Summary

As a natural supplement, Kombucha is able to contribute to a state of health and general well-being. Also, for various health issues Kombucha has been used to alleviate disorders, to back up therapies and to activate the body's self-healing powers.

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Address of the author:
Dr. Stefan R. Becker
Verlag für GanzheitsMedizin
Peter Merian-Strasse 58
CH-4002 Basel

Table 1 Constituent substances of Kombucha and their effects [1,11,12,13]

Substances	Effects on health and well-being
Organic acids	
Glucuronic acid	■ detoxifies the body of metabolic waste and toxic foreign substances
Acetic acid	■ revitalises ■ stimulates the metabolism ■ improves digestion
Dextrorotatory actic acid	■ stabilizes and regenerates the intestinal flora ■ promotes growth of beneficial bacteria in the digestive tract ■ activates muscle metabolism ■ provides energy to cells and brain ■ stimulates digestion ■ protects the digestive system against harmful bacteria and viruses
Acetic acid, gluconic acid	■ stimulate various metabolic functions ■ promote the absorption of valuable metabolites in the intestines
Usnic acid	■ antibacterial
Enzymes	■ support and regulate the metabolism ■ improve digestion by breaking up nutrients (carbs / protein)
Polysaccharides	■ strengthen the immune system ■ strengthen the connective tissue
Living yeast (about 10 million yeast cells per ml)	■ positive effect on the clarity of skin ■ provides important vitamins, essential amino acids and enzymes ■ beneficial for the intestine (pH in the intestinal environment) ■ supports the immune system
Vitamins Vitamin B1, B2, B3, B6 and B12	■ strengthen the nervous system ■ support energy production ■ essential for oxygen transport and energy / protein metabolism ■ metabolise protein and unsaturated fatty acids ■ assist in blood formation and immune defense
Vitamin C	■ improves immune protection
Vitamins D, E and K	■ assist in the skin, cartilage and bone formation ■ assist in blood coalgulation ■ vitalize the organism
Biotin	■ promotes healthy cell growth ■ invigorates skin and hair
Folic acid	■ plays an important role in all processes of growth and development ■ essential for cell division - and cell formation ■ involved in formation of red blood cells
Minerals Iron	■ formation of red blood cells ■ important for oxygen transportation in the blood ■ important for enzyme production
Potassium	■ assists in regulating water balance in the body ■ positively affects kidney function and assists the body in elimination
Calcium	■ strengthens bones and teeth
Copper	■ supports immune system and blood formation
Magnesium	■ activates the enzymes involved in energy metabolism ■ supports the production of hormones ■ important for bone growth ■ critical agent for the interaction between nerves and muscles
Manganese	■ important for the production of thyroid hormones ■ activates enzymes
Sodium	■ regulates tissue tension ■ together with potassium essential for muscle function and blood pressure ■ monitors the acidity of the blood
Zinc	■ important for cell metabolism, cerebral metabolism and nervous system ■ contributes to immune defense ■ supports blood formation, growth and healing of wounds