



## Kombucha Industry Safety Fact Sheet

### What is Kombucha?

Kombucha (also referred to as Kombucha Tea) is a category of functional, non-alcoholic/low-alcohol beverages produced by aerobically fermenting sweetened tea (*Camellia Sinensis*) using a symbiotic culture of bacteria and yeast (SCOBY). The resulting beverage is typically slightly tart yet sweet, and lightly effervescent.

The microbial populations in the kombucha culture vary: the yeast component generally include *Brettanomyces* along with other species like *Saccharomyces* and *Zygosaccharomyces*, while the bacterial component almost always includes *Gluconacetobacter xylinus* which oxidizes yeast-produced ethanol to yield acetic acid (and other acids).

*Gluconacetobacter xylinus* produces relatively large amounts of bacterial cellulose, creating a zooglear mat (biofilm) often referred to as a SCOBY (symbiotic culture of bacteria and yeast). After fermentation, the beverage can be consumed safely raw thus preserving the live, active cultures, or heat treated (pasteurized) which kills the organisms and creates a shelf stable product.

## **Where is kombucha currently being produced?**

Today, commercially produced kombucha is found in nearly every country across the globe with breweries located in the US, Canada, Mexico, Australia, New Zealand, Europe, Japan, Korea, Brazil, Chile and Uganda. In the US, the largest market, sales have grown 31.4% year-over-year, creating a near \$1.2B industry and growing.

## **What are the beneficial components of kombucha?**

The beverage contains beneficial polyphenols (antioxidants) derived from the tea, organic acids produced through fermentation by the *G.xylinus*, and if raw, viable cultures to contribute to the human microbiome. The microorganisms also produce enzymes and amino acids.

While clinical studies on humans have not been conducted, a plethora of in vitro and in vivo research exists suggesting health benefits (see below Research References)

## **Are there any health concerns associated with drinking kombucha?**

Kombucha manufactured by commercial brewers should be produced under good manufacturing practices (GMP's) and strict sanitation procedures and abide by all country and/or local regulations regarding food safety, ingredients, and labeling.

Kombucha that is properly fermented has a final pH of 4.2 or less to prevent the growth of pathogen organisms such as *E. coli*, *C. botulinum*, *C. perfringens*, and *B. cereus*. Typically, kombucha has a final pH of 2.5-3.5. Overfermentation of pH < 2.5 is not recommended due to excessively sour taste and higher levels of acetic acid.

Due to its acidic nature, kombucha should not be fermented in vessels containing lead glazes, nor metal vessels that are not constructed of stainless steel to prevent toxicity from metals leaching into the beverage.

Most kombucha contains a trace amount (< 0.5% by volume) of alcohol resulting from the fermentation process when yeast convert the sugars to ethanol. Much of the ethanol is converted via oxidation by the *G. xylinus* to acetic acid. Ethanol production can be controlled via fermentation variables and refrigerated storage after packaging. This low level is considered non-alcoholic and Halal. Please defer to local laws regarding permissible ethanol levels for non-alcoholic beverages as they vary by country.

For regions where refrigeration isn't feasible nor the supply chain controlled, pasteurization will halt further fermentation but will render the beverage "dead" as there are no live cultures remaining.

Other styles of kombucha such as "hard" are alcoholic and thus should not be considered Halal and ought to carry the appropriate warnings per local regulations.

## **Kombucha Manufacturing Best Practices**

Learn more about commercial Kombucha brewing Best Practices here → <https://kombuchabrewers.org/resources/best-practices/>

Want to learn more about Kombucha Brewing Safety? Contact Kombucha Brewers International → [admin@kombuchabrewers.org](mailto:admin@kombuchabrewers.org)

## **Kombucha Food Warnings**

Governments in the 1990's issued warnings regarding consumption of Kombucha. These warnings were based on isolated incidences where the individuals involved had compromised immune systems. Further investigation and testing of the Kombucha they were consuming did not yield any tangible evidence that the Kombucha was cause for their illness.

Kombucha is a fermented food like sauerkraut, yogurt, and milk kefir. Just like any food, individuals may experience food sensitivity. Kombucha producers label their products with clear consumer information so that individuals can decide if including Kombucha in their diet is appropriate for them.

## Research References

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