



BC Centre for Disease Control
Provincial Health Services Authority

Fact Sheet: Evaluating Kombucha Food Safety Plans for Alcohol Risk

Purpose: this document provides the regulatory rationale, food safety plan requirements, critical limits, controls, and critical control points for alcohol in kombucha teas. Other biological, physical, and chemical hazards and risks associated with [kombucha tea fermentation](#) is provided in a BCCDC food issue note (updated March 2020). Guidance for EHOs and processors on assessment and control of alcohol are reviewed in this fact sheet.

Addressing Alcohol in Kombucha Food Safety Plans

Kombucha is a brewed tea made with sugar and fermented with a live culture of yeast and bacteria. The basis of the fermentation is the conversion of sugar to ethanol by yeast, followed by conversion of ethanol to acetic acid by bacteria. A [BCCDC study](#) found many kombucha products contained levels of alcohol above the regulated limit of 1% alcohol by volume (ABV). Products made in BC had the worst record: 70% (n=27) of BC processors made products with alcohol levels exceeding 1% ABV and 29% had alcohol levels exceeding 2% ABV.

Why low levels of alcohol are a concern and considered a health hazard

The amount of alcohol that causes illness (toxicity or intoxication) is calculated by the alcohol dose and weight of the individual. Low amounts of alcohol in lower weight toddlers, for example beverages with less than 5% ABV when consumed by a child weighing 10kg or less, can cause alcohol poisoning. Children who have ingested doses of 50 mg of alcohol (ethanol) require observation in hospital. A kombucha drink that contained 2.5% ABV (containing 33 mg of alcohol per 100 mL) would mean that less than a cup of tea (150 mL) would be enough to cause alcohol poisoning in a child weighing 10 kg or less. Physician guidelines recommend that people who are pregnant should avoid all alcohol to protect the fetus. There are also many other individuals in the population who may want to avoid ingesting any alcohol, for example, if they are taking prescription medications, driving, have an alcohol use disorder or choose to avoid all alcohol for personal or religious beliefs.

Regulatory rationale

Kombucha products imported into the province or those that are made in BC for export outside of the province fall under the regulatory oversight of the Canadian Food Inspection Agency (CFIA) and require a Safe Food for Canadians license as shown in Figure 1, top line). Requirements for labeling are made by Health Canada and because ethanol is a chemical under the jurisdiction of the Bureau of Chemical Safety (HC-BCS).

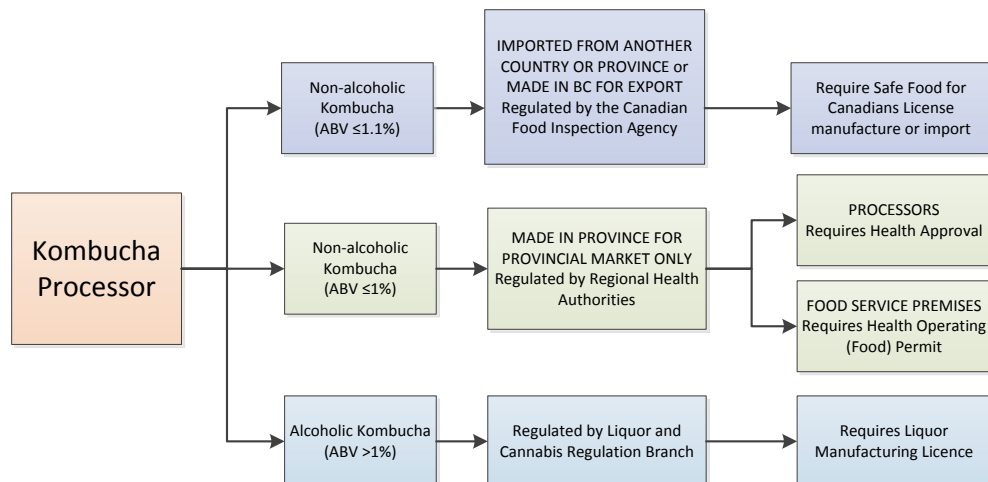


Figure 1. Oversight of alcohol in beverage manufacture

Within BC, for kombucha products made and consumed within the province, processors are required to have a food safety plan approved by the Regional Health Authority where the processor operates and receives a health approval, or in food service establishment where kombucha is made and sold on site and receives a health operating permit. Alcoholic kombucha products made in BC are regulated by the Liquor and Cannabis Regulation Branch, requiring a liquor manufacturing license.

BC Food Safety Plan Requirements

In BC the [Public Health Act](#) specifies that operators engaging in regulated activities must prevent health hazards, as well as respond to and mitigate health hazards that arise (section 18). The requirements for a food safety plan are specified in the [Food Premises Regulation](#) section 23(2) which states that operators must develop written procedures (e.g., a food safety plan) that ensures health hazards do not occur. This section further requires identification of critical control points (CCPs), critical limits for the CCPs, procedures and action to control critical limits. The Ministry of Health has provided operators with [guidance](#) on creating a Hazard Analysis Critical Control Point (HACCP) based food safety plan to assist with these requirements.

A. WHAT PROCESSORS NEED TO KNOW ABOUT CONTROLLING ALCOHOL

Processors intentionally producing beverages with an ABV greater than 1 percent (>1%) require a liquor manufacturer license. Liquor manufacturing is regulated by the Liquor and Cannabis Regulation Branch (LCRB). They should contact the [LCRB](#) and apply for a manufacturer's license before producing any more product.

1. Alcohol is a chemical hazard that must be described in the operator's food safety plan.

- As described above, processors producing non-alcoholic kombucha must have a health approval or health operating permit.
- It is their responsibility to ensure unintentional alcohol above 1% ABV is not present in their products during shelf-life and through-out consumer use and abuse of the product.
- Kombucha that continues to ferment after bottling and distribution may allow alcohol levels to rise. Processors are recommended to test kombucha for alcohol using an [approved method](#).

2. Control of the hazard must be demonstrated by the operator by:

1. Testing alcohol in the product at the time of bottling and at the end of the products shelf-life to demonstrate compliance with regulations that alcohol content does not increase above 1% ABV. Frequency of testing should be sufficient to demonstrate stability in the amount of alcohol present with any given process (minimum of three tests). Periodic testing is expected to be performed to verify or when a process method changes (minimum annual verification).
2. Incorporating alcohol as a Critical Control Point (CCP) into their written food safety plan and explaining how the CCP will be controlled with explanations of the critical limits also in the food safety plan.
3. Having a corrective action plan in place in the event that alcohol is above 1% ABV, keeping records of the critical limits and actions taken, and making those records available to inspectors during inspections.

4. Keeping records to show that alcohol testing is being done, and making those records available to inspectors during inspections.

3. Critical limit options

There are critical limit options when alcohol is not controlled. Examples of loss of control include (1) when testing demonstrates alcohol is >1% ABV, or (2) when a processing error occurs that would result in excess alcohol in the batch, such as addition of extra sugar or flavoring compounds, or (3) fermentation stalls due to cooler temperature. Critical limit options can be summarized as the 4 “D’s” – dilute, delay, divert or discard.

- Diluting the batch;
- Delay and continue fermenting for a longer period so that alcohol is converted to acetic acid;
- Diverting to alcoholic market stream (liquor manufacturing licence would be required); and
- Discarding the batch.

Caution should be exercised when extending fermentation to ensure that the pH of kombucha does not become too acidic and fall below an acidity value of 2.5.

If alcohol is a persistent problem the operator should consider reviewing their process and recipe. Recommendations include avoiding added sugars after the fermentation period (as residual sugars provide food for yeast) and controlling yeast populations by:

- Employing technology to remove yeast through centrifugation, or
- Choosing yeast populations that do not grow at refrigeration temperatures, or
- Pasteurizing the product at time of bottling to ensure yeast cannot convert added flavoring and residual sugars to alcohol, or
- Some other method to control yeast.

4. Where can processors seek help reviewing their processing method to reduce alcohol risk?

Kombucha processors requiring assistance reviewing their process and alcohol testing method may contact the BCIT Natural Health Products laboratory for assistance on a cost recovery basis. Contact Dr. Michael Chan at Michael.Chan@bcit.ca.

B. WHAT INSPECTORS CAN DO TO ASSESS ALCOHOL AS A HAZARD DURING ROUTINE INSPECTIONS AND REVIEWS OF FOOD SAFETY PLANS

Food safety plans are routinely assessed to ensure that the food process and hygienic practices in establishments are working to control health hazards. Alcohol is a chemical rather than microbial hazard. When we assess for chemical hazards we are usually assessing the weight of an ingredient added to a recipe to ensure that the correct amount is added. Alcohol is not an added ingredient in kombucha. It is created during the fermentation process. It may increase or decrease over time during the fermentation period, after bottling, during distribution and during its shelf-life. Active yeast in kombucha will increase alcohol levels and carbon dioxide when sugar is available and particularly when temperatures increase. While it is the operator’s responsibility to control alcohol (a health hazard) in

their product, an inspector should review the operators' control by ensuring the hazard is addressed in the food safety plan, production logs and alcohol testing records.

New and existing kombucha processors should not be granted a health approval unless a food safety plan is available that controls alcohol as a chemical hazard. The plan should identify CCPs, specify critical limits for each CCP, and state corrective actions when the process fails to meet a critical limit.

During inspections EHOs may:

- review food safety plans during inspections;
- require evidence that the procedures outlined are adequate and being followed in the form of
 - records for alcohol testing
 - records for control of alcohol as a CCP when critical limits are not met that show actions taken to mitigate the hazard (e.g., corrective actions).

Monitoring for alcohol should be an on-going activity with a demonstrated history of compliance to regulations. It should be stressed that EHOs are **not** expected to collect samples for testing. However, if there is an ongoing demonstrated history of non-compliance (e.g., no alcohol testing is done, or control of alcohol is not demonstrated by elevated alcohol levels repeatedly found in testing records) then further actions may be considered. BCCDC may be contacted for further advice on this issue, such as assistance with reviewing food safety plans, or as a liaison between the health authority and LCRB to report non-compliance.

Further recommendations:

BCCDC recommends that precautionary statements and labelling be included on kombucha products so consumers can make informed choices. There is a population risk for alcohol consumption in any amount and this risk increases in vulnerable groups. Consumers have the right to know what products contain alcohol, how much alcohol is present, and if there are any risks to consuming the product. Labelling should include a declaration of the alcohol content, precautionary statements for vulnerable groups (such as during pregnancy and for children), and handling information. For example, labels should include:

- may contain alcohol at <0.5% ABV
- not a suitable beverage for young children or during pregnancy
- keep refrigerated, do not shake
- readable Best Before Date (BBD)

Public guidance: In June 2020 Health Canada created a page to inform the population about unintentional [alcohol in non-alcoholic fermented beverages](#). They ask consumers to keep these beverages refrigerated and to discard beverages past their BBD.

Resources:

BCCDC. Food Safety Assessment of Kombucha Tea Recipe and Food Safety Plan. March 2020. *Food Issue: Notes from the Field*. Accessed from: <http://www.bccdc.ca/resource-gallery/Documents/Educational%20Materials/EH/FPS/Food/kombucha1.pdf>

BCCDC. Alcohol Testing for Kombucha Beverages. April 2021. Accessed from: [http://www.bccdc.ca/resource-gallery/Documents/Educational Materials/EH/FPS/Food/Alcohol testing for kombucha.pdf](http://www.bccdc.ca/resource-gallery/Documents/Educational%20Materials/EH/FPS/Food/Alcohol%20testing%20for%20kombucha.pdf)

Ministry of Health. Food Safety & Sanitation Plans. 2017. Accessed from: <https://www2.gov.bc.ca/gov/content/health/keeping-bc-healthy-safe/food-safety/food-safety-sanitation-plans>

Ministry of Health. Food Safety Plan Workbook. 2017. Accessed from: https://www2.gov.bc.ca/assets/gov/health/keeping-bc-healthy-safe/food-safety-security/food_safety_plan_workbook_sept6_2017.pdf

Sung Sik Jang, Lorraine McIntyre, Michael Chan, Paula N. Brown, Jamie Finley, Sally Xuanping Chen; Ethanol concentration of Kombucha teas in British Columbia, Canada. *J Food Prot* 2021; doi: <https://doi.org/10.4315/JFP-21-130>

Environmental Health Services

Created: April 2021