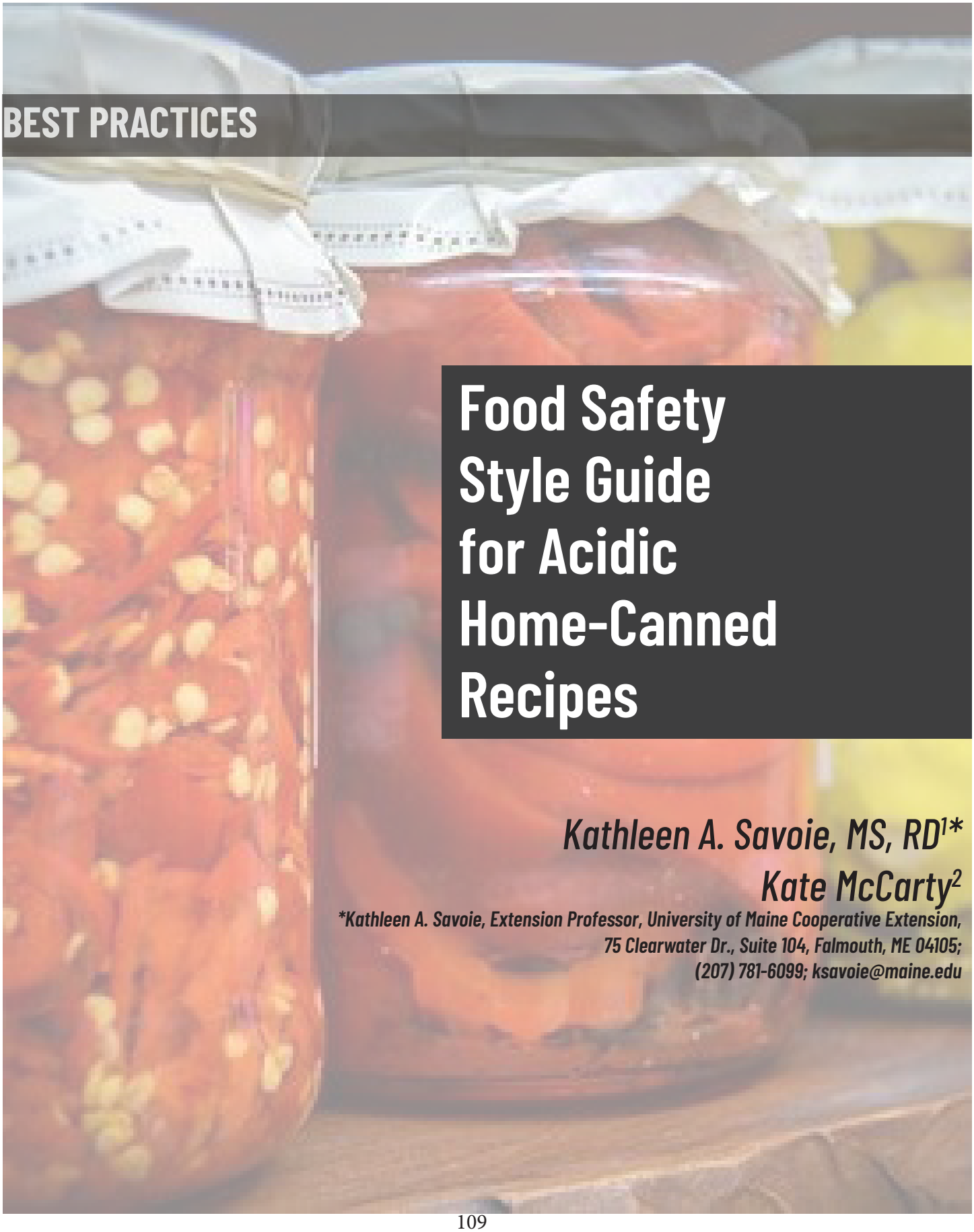
BEST PRACTICES



Food Safety Style Guide for Acidic Home-Canned Recipes

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Abstract

Increased consumer interest in home food preservation and the emergence of research documenting food blogs as a widely utilized yet risky recipe source has created food safety concerns. The Food Safety Style Guide for Acidic Home-Canned Recipes provides best practice guidelines to promote consistency and improved readability amongst recipes created for home canners. Four critical control categories for home food preservation are addressed: prevention of cross-contamination, proper acidification, adequate thermal processing, and producing a vacuum seal. Through targeted educational outreach this style guide intends to minimize the risks of foodborne illness that are associated with consumption of home-canned products.

Best Practices: Food Safety Style Guide for Acidic Home-Canned Recipes

Interest in home canning among the general public continues to grow as does the variety of foods being canned in home kitchens (Gabel et al., 2018; Johnson et al., 2018; Lorenz et al., 2016; Savoie et al., 2019). The process of safe home canning requires adherence to research-based practices for the minimization of food safety risks (Andress et al., 2014; U.S. Department of Agriculture, 2015). Research has demonstrated that recipes have a great impact on consumers' behaviors in the kitchen (Lezama-Solano et al., 2018; Maughan et al., 2016). Historically, home-canned vegetables have been the most common cause of botulism outbreaks in the United States. Two recent botulism outbreaks in 2015 and 2018 involving improperly home-canned foods demonstrate that this risk continues, as well as highlighting the need for continued education for those who want to preserve foods at home (Bergeron et al., 2019; McCarty et al., 2015). Foodborne botulism is a potentially fatal paralytic illness caused by the ingestion of a neurotoxin produced by the spore-forming bacterium Clostridium botulinum. Foodborne botulism outbreaks caused by home-canned foods have highlighted critical areas of concern in home canning that need to be addressed through targeted educational efforts to home canners to prevent botulism (Bergeron et al., 2019; McCarty et al., 2015; Savoie et al., 2019). Additionally, between 2009 and 2015, 12% of recorded outbreaks of foodborne diseases in the United States were attributed to foods prepared in the home, but surveys have demonstrated that consumers do not perceive their homes as a place they are likely to acquire a foodborne disease (Lando et al., 2016), highlighting the need for a food safety focus in home canning education, instruction and recipes. The growing preference for digital communication media necessitates that food safety educators make a concerted effort to reach the public through these channels and also seek to educate digital influencers who provide home canning recipes about their responsibility to disseminate information that is accurate and to utilize existing accurate resources (Savoie et al., 2019).

Purpose

The Food Safety Style Guide for Acidic Home-Canned Recipes is designed for use by any recipe writer who creates and publicizes recipes that have a pH of 4.6 or lower for distribution to the public. This Guide builds upon established best practices (Lezama-Solano et al., 2018; Granberg et al. 2017) and standardization guidelines (Andress et al., 2014; U.S. Department of Agriculture, 2015) to create clarity and consistency within the language used in home canning techniques.

Background

When consumers follow recipes with food safety instructions written into them, they are more likely to adhere to safe food handling practices in their home kitchens (Lezama-Solano et al., 2018, Maughan et al., 2016). Therefore, providing accurate information on preparing a product is crucial for consumers' understanding of the recipe and ultimately their safety. Both the general food safety and nutrition quality of

food blog recipes have raised concerns in recent reviews and beckoned a call for intervention by experts (dietitians and food safety authorities) to target educational materials for food blog writers (Morrison et al., 2019, Mayer et al., 2012; Schneider et al., 2013; Kuttschreuter et al., 2014). Blogs are popular way for the public to access information (Savoie et al., 2019; Schneider et al., 2013; Rutsaert et al., 2014; Morrison et al., 2019). Research has identified that the popular web-based resources commonly used by today's home canners lack adherence to and inclusion of USDA recommended home canning practices (Savoie et al., 2019). A recent study conducted to assess the adherence of salsa recipes on blogs to USDA home canning guidelines found that the majority of USDA home canning guidelines were not included in food blog recipes (Savoie et al., 2019). Specifically, an average of 70% of guidleines were missing across all four categories analyzed (prevention of cross-contamination, proper acidification, adequate thermal processing, and producing a vacuum seal), representing an overwhelming lack of adherence and cause for food safety concerns (Savoie et al., 2019).

Findings

The Food Safety Style Guide for Acidic Home-Canned Recipes (see Figure 1.) is designed for use by any recipe writer who creates and publicizes recipes that have a pH of 4.6 or lower for distribution to the public. This Style Guide builds upon previous research that was conducted to establish consumer preferences regarding recipe format and style and includes standardization guidelines to create consistency and clarity within the language used in home canning techniques (Lezama-Solano et al., 2018, Granberg et al. 2017). In addition to adherence to USDA Home Canning Guidelines (Andress et al., 2014; U.S. Department of Agriculture, 2015), this Guide addresses issues related to readability, another factor in recipe comprehension. Readability issues are improved through style guide format standardization for font, layout, numerical lists and bullet features (Lezama-Solano et al., 2018). Four critical control categories for home food preservation are addressed in this style guide: prevention of cross-contamination, proper acidification, adequate thermal processing, and producing a vacuum seal. Specific steps in the Instructions Style section are targeted messages to reduce cross contamination (i.e., wash produce, clean kitchen area). To ensure correct acidification, the Ingredients Style section provides standard descriptive language to direct the recipe user to the proper ingredient and reduce confusion (i.e., 5% acidity and bottled lemon juice). Furthermore, the F*ood Safety Style Guide for Acidic Home-Canned Foods* refers the recipe writer to their Food Processing Authority for recipe Product and Process Review to ensure that the recipe is suitable for processing in a boiling water bath, properly acidified and meets guidelines for compliance with thermal processing (i.e., thickness, viscosity, and liquid to solids ratio) and adequate processing time to attain a vacuum seal. The Style Guide identifies standard statements for filling jars to adhere to USDA research-based guidelines to reduce food safety risks by honing in on steps to address adequate thermal processing (i.e., temperatures controls, chop, processing) and producing a vacuum seal (i.e., processing times, filling jars, temperatures controls). This targeted educational outreach effort intends to minimize risk of foodborne illness associated with consumption of home-canned products. This F*ood Safety Style Guide for Acidic Home-Canned Recipes* provides guidelines to ensure consistency among recipes used by home canners to reduce the risks associated with home canning.

Summary/Discussion

Overall, research has demonstrated that food blog content does not include the majority of recommended home canning practices related to thermal processing, acidification, attaining vacuum seals, adjusting for altitude, and preventing contaminants (Savoie et al., 2019). Given this lack of content to communicate research-based information, food blog authors are potentially increasing the risks associated with home canning. Including correct food canning guidance in blogs, or providing links to research-based websites including USDA, NCHFP and Extension, may help to reduce the risk of foodborne illness from these foods.

This *Food Safety Recipe Style Guide for Acidic Home-Canned Recipes* is a tool to reinforce that research-based food preservation resources are essential in promoting safe home canning techniques (see Figure 2) . This tool, a recipe style guide that incorporates food safety instructions as well as USDA and NCHFP guidelines to minimize risk in the areas of

vacuum sealing, cross-contamination, thermal processing, and acidification, could assist in risk reduction. Given the documented current critical area of concern in consumer home canning practices and a heightened need for Extension-based efforts to educate the public, with emphasis on the digital influencers, the *Food Safety Style Guide for Home-Canned Foods* provides a research-based tool to of best practices for home-canned recipes to reduce the risk of foodborne illness.

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Figure 1

Food Safety Guide for Acidic Home-Canned Foods

Food Safety Style Guide for Acidic Home-Canned Foods

This style guide contains a set of standards for writing and designing content for acidic home-canned recipes. A Food Processing Authority should approve all recipes for safety.

General Layout & Design

- 14-point font for recipe title
- 12-point font for ingredient list and instruction text
- Use a sans serif font style
- Do not justify text format

Ingredients Style

- List ingredients in a bulleted list.
- List ingredients in the order in which they are used in the instructions.
- Include all the ingredients used in the recipe in the ingredients list.
- Units of measure:
    - List measurements in the imperial, standard units of measurement, not metric.
    - If using abbreviations: Use abbreviations T. (tablespoon) and tsp. (teaspoon).
    - Use numerals not words (ex. 1 garlic clove, not one garlic clove).
    - Do not use subscript (i.e. ½); for readability use 1/2.
    - Use a hyphen between whole numbers and fractions (i.e. 4-1/2 cups) and between a number and a word (i.e. 1/2-inch).
    - Avoid numeral runs by separating numbers with parentheses (e.g. 1 (15-ounce) can of kidney beans.
    - Use inch instead of the " abbreviation.
    - Use the easiest units of measure (ex. 1/4-cup instead of 4 tablespoons).

- Indicate if ingredients are optional using (optional) after the ingredient.
- Use lowercase text except for proper nouns.
- Specify the canning jar size and quantity needed.

As needed, ingredients must include:

- Brand name of pectin, as recipes are brand-specific.
- Use standard chop measurements defined by the actual size (ex. use 1/4-inch chop instead of small chop; use 1/2-inch chop instead of medium chop; use 3/4-inch chop instead of large chop) and set off by a comma (ex. 1 cup onion, 1/4-inch chop).
- Acidification: specify (5% acidity) after vinegar; specify bottled lemon (or lime) juice.
- Refer to salt as "canning and pickling salt".
- In salsa recipes, specify "Do not drain tomatoes".

Instructions Style

Use numbered steps that contain complete sentences and an active voice. Steps should be in manageable task units.

Include before any instructions specific to the recipe:

- To ensure you are using current canning recommendations, refer to USDA's *Complete Guide to Home Canning* or the *National Center for Home Food Preservation* for an overview of canning procedures.
- Products that have had Product and Process Review by a Food Processing Authority should be clearly stated.
- "Clean the kitchen area and wash hands with soap and water."
- "Wash and rinse canning jars; keep warm until ready to use. Wash two-piece screw bands and lids." Do not include information on simmering lids in warm water.
- If processing time is under 10 minutes include: "Sterilize jars by submerging for 10 minutes in boiling water."

As needed, recipe instructions include:

- Wash produce under running water.
- Clear cooking directions (boil and length of time).
- Instructions for making safe substitutions.

Standard instructions for filling jars:

- Immediately pour hot [product name] into hot jars, leaving [#]-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe rims of jars with a clean, damp paper towel; apply two-piece metal canning lids until fingertip tight.
- Place the jar in a preheated boiling water bath canner (140°F for raw pack, 180°F for hot pack) with a rack. Repeat until all jars are filled. Check that the water level in the canner is at least 1" over the jars.
- Once the water in the canner has come to a vigorous boil, process for [#] minutes, adjusting for altitude. Turn off the heat, remove the lid, and let the jars stand for 5 minutes.
- Remove jars from the canner and let cool, undisturbed, for 12 to 24 hours.
- Check that vacuum seals have formed. Label and date jars; remove screw bands; store in a clean, cool, dark, dry place and use within 1 year for best quality. Refrigerate after opening and use within 2 weeks.

Include yield as number and size of jars (ex. Yields 5 to 6 pint jars)

Include recipe attribution when necessary: "Adapted from *Title of Resource*"

Figure 2

Sample recipe using Food Safety Style Guide for Acidic Home-Canned Recipes

Sample recipe using Food Safety Style Guide for Acidic Home-Canned Recipes

Let's Preserve: Tomato Salsa with Paste Tomatoes

- 7 quarts, peeled, cored, 1/2-inch chopped paste tomatoes, do not drain tomatoes
- 4 cups seeded, 1/4-inch chopped long green chilies
- 5 cups 1/4-inch chopped onions
- 1/2 cup seeded, finely chopped jalapeno peppers
- 6 cloves garlic, finely chopped
- 2 cups bottled lemon or lime juice
- 2 tablespoons canning and pickling salt
- 1 tablespoon ground black pepper
- 2 tablespoons ground cumin (optional)
- 1 tablespoon dried oregano leaves (optional)
- 2 tablespoons fresh cilantro, minced (optional)

1. To ensure you are using current canning recommendations, refer to USDA's *Complete Guide to Home Canning* or the *National Center for Home Food Preservation*.

2. Clean the kitchen area and wash hands with soap and water.

3. Wash and rinse standard mason-style canning jars; keep warm until ready to use. Wash two-piece screw bands and lids.

4. Wash produce under running water. Combine all ingredients except cumin, oregano, and cilantro in a large pot and bring to a boil, stirring frequently, then reduce heat and simmer 10 minutes. Add spices and simmer for another 20 minutes, stirring occasionally.

5. Ladle hot salsa into pint jars, leaving 1/2-inch headspace. Remove air bubbles and adjust the headspace if needed. Wipe rims of jars with a clean, damp paper towel; apply two-piece metal canning lids until fingertip tight.

6. Place the jar in a preheated boiling water bath canner with a rack. Repeat until all jars are filled. Check that the water level in the canner is at least 1 inch over the jars.

7. Once the water in the canner has come to a vigorous boil, process for 15 minutes, adjusting for altitude. Turn off the heat, remove the lid, and let the jars stand for 5 minutes.

8. Remove jars from the canner onto a cooling rack and let cool, undisturbed, for 12 to 24 hours.

9. Check that vacuum seals have formed. Label and date jars; remove screw bands; store in a clean, cool, dark, dry place and use within 1 year for best quality. Refrigerate after opening and use within 2 weeks.

Yield: 16 to 18 pints

Adapted from *National Center for Home Food Preservation*