

Investigating Coloradan Sourdough Breads and Consumer Perceptions of Healthfulness

Fermented foods have a rich history in many cultures worldwide and are still commonly consumed today. Sourdough bread is a fermented food that transcends the food industry, having become a pastime for some and a food with supposed medicinal properties for other. Commercially, the global sourdough bread market is worth over \$2.5 billion, and interest in the product increased significantly for home-bakers during the COVID-19 pandemic is sourdough bread, as evidenced by “sourdough bread” being the most search-for recipe on Google in 2020. In addition to unique flavor profiles due to the diverse and ever-changing microbiomes of their starter cultures, sourdough breads are often touted for their health benefits. Notably, many peer-reviewed studies refer to “anecdotal evidence” that individuals with celiac disease and other gluten sensitivities experience mitigated or an absence of symptoms upon consumption of sourdough bread in comparison to a typical yeast bread. However, consumer data has never been published to support the claim. Furthermore, little is known about the reality of the claim that sourdough bread is less harmful for gluten-sensitive individuals than typical yeast breads.

The **overarching objective** of this internship is to survey consumers and producers of sourdough bread about their perceptions of sourdough healthfulness as it related to gluten intolerances such as celiac disease, and to collect starter cultures from bakeries across Colorado for investigation of potential protective effects against these conditions. This project will complement ongoing work in the Department of Food Science and Human Nutrition’s Food Structure and Function Lab (FSFL), which is analyzing a panel of sourdough starter cultures for their impact on gluten protein and stimulation of celiac disease-related inflammation *in vitro*.

Proposal: Research, analysis and development of outreach materials addressing healthfulness perceptions vs. realities of sourdough bread; development of research techniques for further studies

Fitting within the recommended publish health protocols, field experience would be encouraged, but all research has been designed to be possible through virtual or socially distanced engagement if necessary. Under the guidance of the mentoring team, the Extension summer intern would complete the following aims:

- Investigate consumer habits and perceptions related to the healthfulness of sourdough bread as it related to gluten intolerances
 - Develop survey for sourdough consumers to gather information about consumption habits and perceptions about the sourdough healthfulness
 - Meet with extension professionals to gather input on survey and identify additional questions relevant to stakeholder interests
 - Distribute survey and collect consumer data
- Collect samples of starter cultures and information relevant to microbial and chemical analysis from commercial Colorado sourdough producers
 - Develop information sheet for producers to fill out regarding starter handling and maintenance
 - Develop protocol for storage of starter culture samples until chemical/microbial analysis
- Develop outreach materials summarizing findings related to consumer perception of sourdough breads (collected from this study) versus actual findings of healthfulness (collected from ongoing work in the FSFL)
 - Creation of social media materials for CSU Extension Facebook, Pinterest and Instagram
 - Design downloadable material for Extension websites
 - Assist with development and delivery of a 1-hour webinar to share with Extension for future use

Student Benefits: opportunity to develop qualitative research skills through the development, dissemination and analysis of the survey portion of this project; engage with Extension agents; engage with stakeholders (Colorado consumers and business owners); work with Extension specialists and campus professionals to develop effective outreach materials for both technical audiences and stakeholders.

Mentor/Advisory Team:

Charlene Van Buiten, Assistant Professor in the Department of Food Science and Human Nutrition, affiliate faculty in the Cell and Molecular Biology Program, and instructor of FTEC 210 Science of Food Fermentation and FTEC 447 Food Chemistry

Marisa Bunning, Professor and Extension Specialist in the Department of Food Science and Human Nutrition

Sheila Beckley, Extension Agent for Weld County

Location: Colorado State University – Fort Collins Campus, with occasional travel around Larimer, Weld, Boulder and Arapahoe counties

Program Reporting Unit Affiliations: Nutrition, Food Safety and Health