FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Feed the Future Innovation Lab for Livestock Systems

Microbial safety and enhanced nutritional profile through controlled milk fermentation

2024 – 2025

Dairy products are a source of quality protein and micronutrients. Yet, their ability to reach the public is hampered by their limited shelf life and questionable safety, especially in low-income countries. The Ethiopian dairy sector is largely informal, with an estimated 90% of the marketed milk being sold through non-regulated markets, of which an estimated 20% is sold as raw fermented milk called ergo from café-like outlets. In Addis Ababa alone, over five hundred of these outlets reach tens of thousands of people each day. Although dairy makes a significant contribution to nutrition, child growth, health, and livelihoods, there are several safety concerns regarding milk products in Ethiopia, including contamination with microbial pathogens such as Mycobacterium bovis, Salmonella, and Campylobacter, which largely contribute to the global burden of foodborne disease.

Principal Investigator

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Contamination can occur at different stages of the value chain, and bacterial pathogens increase during raw milk transport and storage. In the case of ergo, raw milk is used by informal processors to ferment it for consumption. Over 80 milk outlet owners in Addis Ababa and Ethiopia have been trained to produce probiotic yogurt as a safer alternative to ergo. The project aims to further scale the Yoba yogurt concept to legitimize the dairy sector.

Objectives

- Generate local evidence around the safety and nutritional value of pasteurized and controlled fermented yogurt,
- Intensify the collaboration with government bodies, development projects and other organizations for evidence-based promotion and recommendation of the use of Yoba technology, thereby improving on local ergo production practices.
- Develop the standards on processed milk products in Ethiopia and extend its shelf life

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Yoba for Life

ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

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Background

Ethiopia has an underdeveloped dairy sector. Although there has been progress in recent years, data from the last 10 years indicate a meager average productivity per cow of 1.9 liters per day, poorly developed infrastructure in terms of milk coolers and roads, and a per capita milk consumption of only 20 liters per year. According to our estimates, over 90% of the milk produced is sold through informal channels. In the informal sector, an estimated 20% of the marketed milk is sold in the form of raw fermented milk called ergo from café-like milk outlets. In Addis Ababa alone, there are over five hundred of these outlets reaching tens of thousands of people each day.

Approach

In this project, we will compare the nutritional and safety profile of 10 locally produced spontaneous fermented milks (ergo), 10 raw milks fermented with defined Kefir culture, 10 pasteurized milks fermented with defined Kefir culture, and 10 controlled fermented milks (with the probiotic starter culture) from Amhara, Oromia and Sidama region. We will evaluate 1) presence of beneficial and potential harmful microorganism, and 2) amounts of micro-nutrients including selected vitamins (deficient in the diet) in the raw milk used as main ingredient, the traditional ergo, the kefir and the yoghurt during the expected shelf life of the product. The parameters are connected, as levels of micronutrients are influenced by the microbial composition of the product.

Collaborators and Partners

- Vrije Universiteit van Amsterdam
- Ensure E Dairy project
- Eurofins Scientific
- TARTARE project
- Ethiopian Food & Drug Authority
- Ethiopian Standards Agency
- Ethiopian Institute of Agricultural Research
- LDI
- Addis Ababa University: Centre for Food Science and Nutrition
- Hawassa University
- Bahir Dar University
- Bless Laboratories

Project Website Link

https://livestocklab.ifas.ufl.edu
www.feedthefuture.gov