

Reservoirs of antimicrobial resistance genes in retail raw milk

Jinxin Liu
Yuanting Zhu
Michele Jay-Russell
Danielle G. Lemay
David A. Mills

Video Byte

Keywords: Raw milk, antimicrobial resistance, metagenomics, public health, retail, milk, pasteurization, antibiotic resistance, E. coli, Microbiome

Posted Date: November 3rd, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-102094/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Trendy health foods are taking off in the United States, but one new trend may do more harm than good. Unpasteurized, or “raw,” milk is purported to have probiotic health benefits. Unfortunately, despite the proposed benefits, contamination with pathogenic bacteria has occurred, and little is known about the extent of antibiotic-resistant microbes present in raw milk sold at retail stores. A new study evaluated the microbiomes of cow's milk samples using DNA sequencing and metagenomics, including over 2,000 retail milk samples from 5 states – both raw milk and milk pasteurized in different ways. Raw milk samples had the highest prevalence of viable bacteria, with Pseudomonadaceae dominating. Probiotic lactic acid bacteria levels were limited in raw milk, and storage outside of a refrigerator dramatically increased bacterial populations expressing antibiotic-resistance genes. Although more work is needed to fully understand whether antibiotic-resistance gene expression in raw milk samples translates into health risks, this study highlights the potential for a high level of antibiotic-resistant bacteria, posing a threat to consumers of commercial raw milk.