Food safety and quality assessment of an automated vending machine for smoothies-a case study

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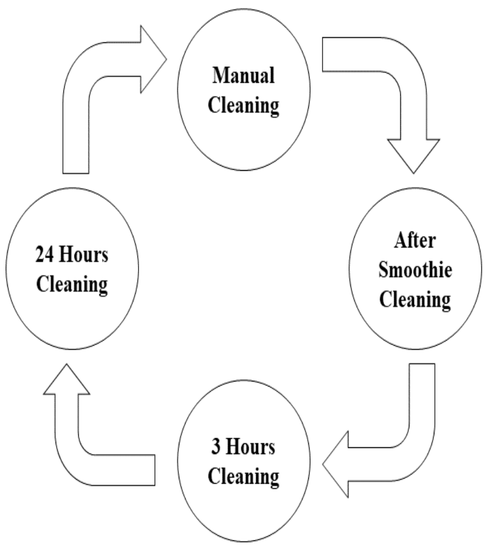
Introduction

- The vending machine industry is changing from pre-packaged selling to on-site food manufacturing thanks to developments in food robotics.
- Along with the manual cleaning of the vending machines, automatic clean-in-place (CIP) techniques were considered, much like food production without human intervention.
- Food safety and quality control of the vending machines are essential.

Methods

- This case study aimed to implement a CIP procedure in a vending machine and assess microbial contamination.
- Water, blender, and smoothies were microbiologically analysed to evaluate the microbial safety of ingredients, equipment, and the final product.

Cleaning Step	Frequency	Temperature (°C)	Purpose
After Smoothie	After each smoothie production	~16-18	Cleaning
3 Hours	3 hours	~85-90	Sanitation
Full Cleaning	12 hours	>100	Sterilization



Results

- Microbiological analysis showed that none of the samples was contaminated with three major pathogens: *Listeria monocytogenes*, Salmonella spp., and *Escherichia coli*.
- This study showed the importance of the CIP process in automated vending machines.

https://www.alberts.be/

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