TESTING SOFT SERVE FOR THE PRESENCE OF E. COLI – A SEASONAL STUDY

IN NELSON MANDELA BAY METRO MUNICIPALITY

GQEBERHA (PORT ELIZABETH)

BY: ASC Public Health and Food Safety Consultants

STUDY DATE: 18 October 2024 – 09 December 2024

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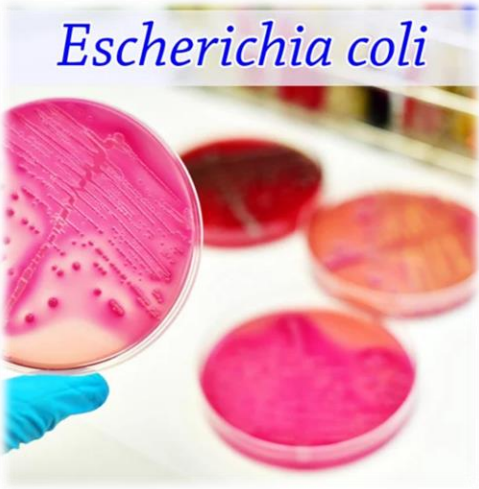
ABSTRACT

ASC Consultants, a food safety and public health consulting company, did a comprehensive study to evaluate the microbiological safety of ice cream in the Nelson Mandela Bay Metropolitan Municipality. The study was conducted across various vendors, including the informal sector, convenience stores, and formal retail outlets. The primary focus was detecting Escherichia coli (E. coli), a well-known indicator of faecal contamination, in ice cream samples.

This study was prompted by concerns of E. coli contamination in raw milk, the main ingredient in ice cream production. As a critical component of the dairy supply chain, raw milk can be contaminated with faecal coliforms, posing a risk to public health. The season change was also considered, as E. coli contamination is likely in warmer seasons. ASC Consultants aimed to assess whether safe, pasteurised milk had been used in ice cream production and whether necessary steps were taken to ensure the final product was free from harmful pathogens.

INTRODUCTION

As the summer season has arrived, ice cream is set to become a popular treat for residents of Nelson Mandela Bay. Numerous vendors offer a variety of options, from soft serve at fast food chains to products from ice cream establishments and supermarkets.



Escherichia coli (E. coli), a bacterium commonly found in the intestines of both humans and animals, has the potential to contaminate food and water. *E. coli* can cause severe human illnesses, including foodborne illnesses and gastrointestinal distress. Given the rising demand for ice cream during the summer months, there is an urgent need to ensure the safety and hygienic standards of products sold within Nelson Mandela Bay to prevent potential health risks associated with *E. coli* contamination.

The study aims to evaluate the presence of *E. coli* in ice cream samples collected from different retailers and vendors to determine whether they meet acceptable microbiological standards for the safety of the public.

Study Objectives

- To test for the presence of *Escherichia coli* in ice cream from different retail outlets.
- To evaluate whether there are differences in contamination levels between different geographical locations.
- To provide recommendations to improve food safety standards and reduce public health risks.

Methodology

The study was conducted in three phases to ensure the reliability and accuracy of the results. Each phase involved collecting ice cream samples from various retailers and vendors operating within the Nelson Mandela Bay Metropolitan Municipality.

The decision to conduct the study in multiple phases was driven by the need to obtain comprehensive and representative data, ensuring that the findings accurately reflect the safety of ice cream products across various sectors.

The samples were collected from the following areas across Nelson Mandela Bay:

Gqeberha Central	Summerstrand	Uitenhage	New Brighton
Newton Park	Dwesi	Humewood	

Sampling Procedure

Ice cream samples were taken randomly in each location at different intervals to assess the variation in the stores on different occasions. Each sampling was carried out in a controlled manner to avoid any cross-contamination.

The process involved:

1. **Selection of Ice Cream Outlets:** A mix of formal and informal businesses were targeted to capture a diverse range of ice cream types and handling practices. The mix of formal and informal traders was to assess all ice cream sales without being biased.

2. **Sample Collection:** At each site, two samples were collected randomly during business days directly from the ice cream vending machine and display storage. The sampler used sterile gloves and used 70% alcohol for hand sterilization to prevent contamination before handling the sterile sampling container.

3. **Sample Storage and Transport:** The samples were carefully stored in sterile containers, placed in a cooler box for temperature control at temperature below 10^{o}C, and transported to the laboratory within 8 hours from sample time.

TEST LOCATIONS

Port Elizabeth Central: Located in the central business district of Gqeberha, PE Central represents a mixed retail environment, with both chain stores and informal vendors. This area was selected to examine ice cream distribution in a high-density urban area.

Summerstrand: is a coastal area of Gqeberha that is significant for tourist activities and is the recommended beach for the summer season. Along the coast, Summerstrand has a combination of formal retailers and informal vendors, providing reliable access to the population visiting the beach.

New Brighton: A historically significant area in Gqeberha, New Brighton is a vibrant community with a mix of formal retail outlets and informal vendors. The study included the area to evaluate ice cream distribution and safety in a densely populated, historically disadvantaged area. This inclusion helps to examine the differences in food safety practices and access to quality ice cream between formal and informal outlets in such communities.

Uitenhage: Situated on the outskirts of Gqeberha, Uitenhage presents a different socio-economic demographic compared to Gqeberha central and its surroundings, with a mixture of supermarkets and informal retail outlets. This region was included to evaluate ice cream safety and distribution outside the more urbanised central areas.

Newton Park: A suburban area that combines both formal and informal retailers. The mix of established businesses and smaller independent vendors makes this location an important case for studying the different retail environments within a single urban area.

Dwesi: A township within the Nelson Mandela Bay region, Dwesi represents a distinct socio-economic environment with a higher concentration of informal vendors catering primarily to residents. Including Dwesi in the study allows for a deeper understanding of ice cream distribution and safety in rural and less densely populated areas, providing insights into the challenges and practices of vendors in these communities.

Humewood: A coastal suburb in Gqeberha, Humewood is known for its popular beach and tourist attractions. The area features a mix of formal retailers, such as ice cream and informal vendors along the beachfront. Chosen for the study, Humewood offers insight into ice cream in a high-traffic, tourist-heavy environment, providing a unique opportunity to examine the challenges faced by both formal and informal outlets in meeting the demands of beachgoers and locals.

STATISTICAL ANALYSIS AND RESULTS

The samples from each trial were tested and analysed using the Dry Rehydrated Film method at PathCare, a SANAS-accredited laboratory, to determine the contamination rates across various outlets and locations. A comparative analysis was conducted between formal and informal outlets and across different geographic regions to identify potential trends or statistically significant differences.

Results

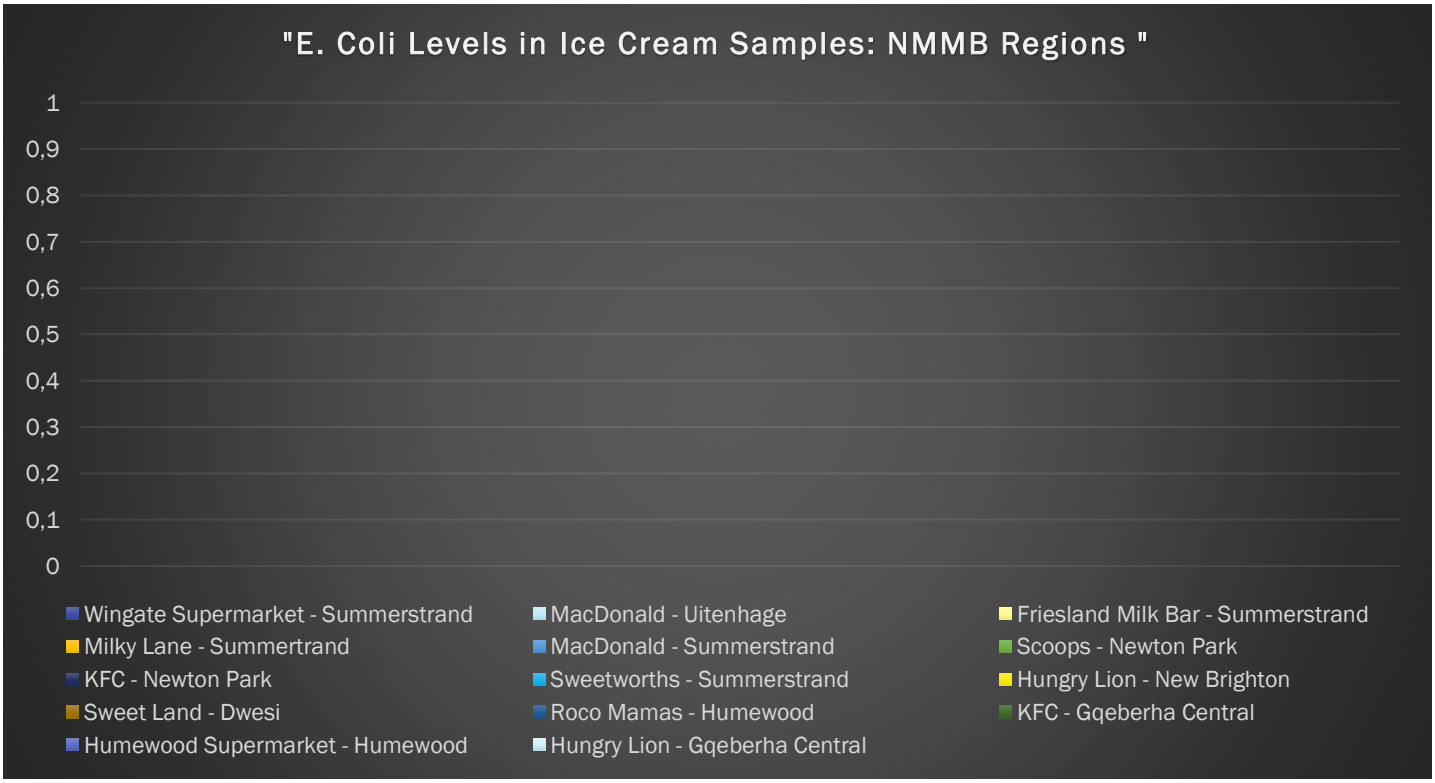
A total of 18 ice cream samples were tested across the seven locations over a period of 2 months.

	RETAILER/ VENDOR	CATEGORY	LOCATION	E. COLI COUNT
1	Wingate Supermarket	Informal Trader	Newton Park	0 cfu/g
2	McDonalds	Formal Retail	Uitenhage	0 cfu/g
3	Friesland Milk Bar	Semi Formal	Summerstrand	0 cfu/g
4	Friesland Milk Bar	Semi Formal	Summerstrand	0 cfu/g
5	Milky Lane	Semi Formal	Summerstrand	0 cfu/g
6	McDonalds	Formal Retail	Summerstrand	0 cfu/g
7	Scoops	Semi Formal	Newton Park	0 cfu/g
8	KFC	Formal Retail	Newton Park	0 cfu/g
9	Sweetworths	Informal Trader	Summerstrand	0 cfu/g
10	Hungry Lion	Formal Retail	New Brighton	0 cfu/g
11	Sweet Land	Informal Trader	Dwesi	0 cfu/g
12	Roco Mamas	Formal Retail	Humewood	0 cfu/g
13	KFC	Formal Retail	Gqeberha Central	0 cfu/g
14	Humewood Supermarket	Informal Trader	Humewood	0 cfu/g
15	Hungry Lion	Formal Retail	Gqeberha Central	0 cfu/g
16	McDonalds	Formal Retail	Summerstrand	0 cfu/g
17	Friesland Milk Bar	Semi Formal	Summerstrand	0 cfu/g
18	Milky Lane	Semi Formal	Summerstrand	0 cfu/g

Discussion

The study's findings indicate no significant concerns regarding the safety of ice cream served at formal, semi-formal, and informal sector outlets within Nelson Mandela Bay. Specifically, all ice cream samples collected during the study tested negative for *Escherichia coli* (E. coli), suggesting that the product itself did not pose any microbial risk regarding contamination with this pathogen.

Despite this reassuring result, the study did highlight notable issues concerning hygiene practices, particularly within the informal sector outlets. These outlets were found to lack proper hygiene protocols, raising concerns about the potential for other types of contamination or the risk of E. coli in future batches of ice cream. However, it is important to emphasise that, based on the current study, all tested ice cream samples were free of *E. coli*, indicating that, at least in this instance, the product's safety was not compromised.



RECOMMENDATIONS

Based on the study's findings, the following recommendations are made to ensure the continued safety of ice cream in Nelson Mandela Bay in the future and address the identified concerns.

Strengthen Hygiene Practices

Informal sector outlets should be encouraged to adopt and maintain proper hygiene protocols. This includes regular handwashing and sanitization of all storage facilities, as it was highlighted that most were in unpleasant hygiene conditions.

Implementation of Food Safety Training

Training programs on safe food handling practices should be implemented across all sectors, focusing on informal vendors. This training should cover proper storage temperatures, avoiding cross-contamination, and other key food safety principles.

Certification programs could be established to ensure that vendors clearly understand food safety protocols, helping to build public confidence in the safety of ice cream sold in these outlets.

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CONCLUSION

This study provides valuable insights into the microbiological safety of ice cream sold across both formal and informal outlets. It revealed that all tested samples were negative for *Escherichia coli* (E. coli). Despite these encouraging results, the study emphasises the need for ongoing vigilance regarding food safety practices, considering the summer season; as temperatures rise, the risk of bacterial contamination, including *E. coli*, increases due to favourable environmental conditions for microbial growth.

This seasonal change underscores the importance of adhering to strict storage, handling, and sanitation protocols to mitigate the risk of contamination. While this study found no evidence of E. coli in the ice cream samples, it is crucial to highlight that the absence of contamination in the present samples does not guarantee future safety.

The increasing demand for ice cream in Nelson Mandela Bay during the summer months further highlights the necessity for formal and informal outlets to maintain rigorous food safety standards. Efforts should be made to raise awareness about the risks of bacterial contamination, ensuring that all vendors, regardless of sector, understand the importance of maintaining proper hygiene practices. By doing so, the risk of *E. coli* and other foodborne pathogens can be minimised, safeguarding public health and ensuring the continued safety of ice cream products in the region.