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The Occurrence of *Listeria Monocytogenes* in the South African RTE Prepared Fruit Supply Chain

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Abstract

L. monocytogenes is a ubiquitous environmental pathogen capable of causing the foodborne illness listeriosis. It's presence in ready-to-eat (RTE) prepared fruit products is of serious concern, as these products cannot undergo heat sterilization due to the negative effects on quality and sensory attributes. It is for this reason that regular monitoring and management of the pathogen in both the agricultural and food processing environment is crucial. Contamination of whole fruit, in particular melons which are grown in close proximity to the soil, creates the opportunity for *L. monocytogenes* occurrence in RTE prepared fruit processing facilities. Furthermore, *L. monocytogenes* survival and proliferation on certain fruit and their pulp within processing facilities has not been extensively explored, especially in the South African context.

Sampling at melon farms in Limpopo, the Eastern Cape and an RTE prepared fruit processing plant in Gauteng was conducted, with presumptive positive isolates obtained from plating on Rapid'L.Mono chromogenic medium confirmed and categorised into lineages using PCR-RFLP typing.

Results obtained found pre-harvest contamination to be exacerbated by environmental factors like cooler and wetter weather, whilst certain niches within food processing facilities were identified as facilitating the growth and survival of this pathogen. The distribution of *L. monocytogenes* revealed a high proportion of lineage II isolates in the environment and on a range of whole fruit like papaya, cantaloupe, watermelon, avocado and guava, whilst lineage I isolates were found in avocado pulp and lineage II isolates in mixed melon salads.

These findings supported previous research regarding the distribution of lineage I and II isolates, with lineage II isolates showing a greater prevalence in the environment. The occurrence of lineage I isolates, typically associated with clinical cases of listeriosis and implicated in a number of outbreaks, in final product raised concern and suggested the need for better management methods that would not negatively impact on product quality, such as HPP. Results regarding the presence of *L. monocytogenes* on fruit products not previously noted as vectors for this pathogen, highlight the need for more stringent disinfection practices in the agricultural and food processing environment to prevent the survival and growth of *L. monocytogenes*.

Biography: Michael K. Esterhuysen

Michael K. Esterhuysen is a Masters' student at the University of Stellenbosch. He is passionate about food safety, with a research focus on *Listeria monocytogenes* and its association with fruit products.