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A Comparison of Initial Background Microbiota on Surface of Melons Grown in Different Regions of the United States

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Introduction: Melons are a perishable commodity that cannot be stored for long periods of time without the adverse effects of spoilage. To preserve quality and develop ways to enhance shelf-life, it is important to evaluate the initial background microbial population present on the melon rinds. The objective was to enumerate and compare the initial background microbial load in different varieties of melons grown in different regions of the United States.

Methods: Different varieties of melons grown in different regions were harvested and shipped to Tucson, AZ. These regions included Texas, Arizona, California, and North Carolina. Using a sterile cutting board and a sterile knife, rinds from two melons of each variety were cut into 10 g squares (1x1 cm). These rind samples were mixed with 90 mL of buffered peptone water before stomaching for 2 minutes to extract the microbes on the surface of the rinds onto the solution. Serial dilutions were made, aliquots spread plated on TSA and enumerated after two days.

Results: The initial background microbial population averages ranged between 4 logs CFU/ml and 8 logs CFU/ml on different melon varieties. In general, there was a difference in the populations of initial background microbial load between melons grown in different regions. Arizona had lower initial microbial load (about 6 logs CFU/ml) compared to North Carolina, Texas, and California (up to 8 logs CFU/ml).

Conclusions: Understanding the initial background microbial populations on different melon varieties will help in developing appropriate measures to improve their shelf-life. The differences in initial background microbial population between melons grown in different regions could potentially be due to the environment in which they were grown. Melons with a higher initial load of background microbiota could have a lower shelf-life compared to those with lower initial loads of background microbiota.