SUMMARY

A recent SIU study funded by the Specialty Crop Block Grant Program Illinois indicates washing fresh produce with sanitizing solutions helps to reduce the microbial loads to ensure safety of products during handling and before consumption.

The study examined the antimicrobial effect of sanitizing solutions on bacterial growth and quality of fresh lettuce, and fresh-cut cantaloupe by using two washing techniques: soaking and spraying. The bacterial loads were studied by plating method after washing and quality is measured by sensory evaluation for presence of mold/ fungi and freshness during 15 days storage period.

Peracetic acid (PAA) performed better as compared to sodium hypochlorite (SH) and acidified sodium chlorite (ASC) on microbial growth and quality analysis. PAA could reduce more than 3 log CFU/g *E. coli* and *L. monocytogenes* by soaking 5 minutes.

Fresh fruits and vegetables are essential part of healthy diet, contain minerals, vitamins, fiber, and other nutrients.

FORE MORE INFORMATION

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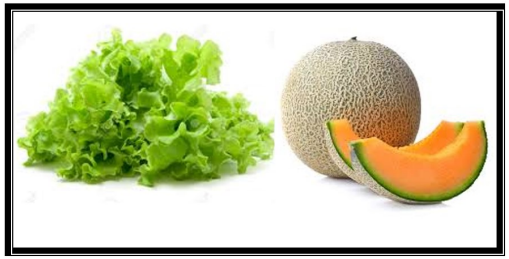
SIU SPECIALTY CROP RESEARCH

WASHING OF FRESH PRODUCE

WITH ANTIMICROBIAL SOLUTIONS FOR REDUCTION OF FOOD-BORNE PATHOGENS



SIU SPECIALTY CROP GRANT FRESH AND LOCAL PRODUCE

ANTIMICROBIAL EFFECT OF SANITIZING SOLUTIONS ON FRESH ROMAINE LETTUCE AND FRESH-CUT CANTALOUPE.

BACKGROUND

Recently the consumption of fresh produce has increased due to the desire of people to have healthy lifestyles. However, fresh produce is more susceptible to being contaminated with bacteria or other foodborne pathogens in the field or after post-harvest processing, handling, and storage conditions.

The SIU food safety research group prepared different sanitization solutions (peracetic acid, sodium hypochlorite, and acidified sodium chlorite) to check the effect of these solutions on microbial growth and quality of fresh produce.

All the 3 antimicrobial solutions prepared are generally recognized as safe (GRAS) organic acids. The washing solutions prepared have similar concentration (100 ppm) to compare which would be better to reduce microbials loads. The inoculated leaves were washed by two techniques: spraying and soaking for 1, 3, and 5 min with water and antimicrobial solutions.

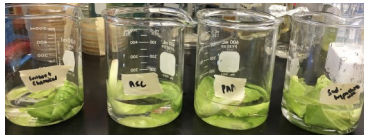
RESULTS

The fresh lettuce and fresh-cut cantaloupe were inoculated with *E. coli* and *Listeria*. Inoculated samples were treated with water, PAA, ASC, and SH by spraying and soaking for 1, 3 and 5 min, respectively. It was found that the water wash could reduce maximum up to 1 to 1.5 log CFU/g microbial loads.

For lettuce, results showed maximum microbial reduction for *E. coli* and *Listeria* was more than 3 log CFU/g by soaking samples in PAA for 5 min. The maximum reduction with spraying treatments was obtained for *E. coli* was 1.24 log CFU/g using ASC while the maximum reduction for *Listeria* was 1.67 log CFU/g by using SH.

For fresh-cut cantaloupe, results showed maximum microbial reduction for *E. coli* was more than 3 log CFU/g and for *Listeria* was 2.5 log CFU/g by soaking samples in PAA for 5 min. The maximum reduction with spraying treatments was obtained for *E. coli* was 1 log CFU/g using SH while the maximum reduction for *Listeria* was less than 1 log CFU/g by using PAA.

The effect of sanitizing solutions on quality



Washing fresh produce before consumption is the most convenient and most recommended method as a

of lettuce and cantaloupe was observed by browning index and sensory evaluation for 15 days storage. After 15 days, the browning index was minimum for water, followed by PAA, ASC and SH respectively. The 9-point hedonic scale sensory results indicated that there was no mold/fungi present on fresh produce during 15 days of storage period. For cantaloupe, the maximum overall acceptance (based on color, smell, presence of mold/fungi and texture) was recorded for ASC followed by PAA, water and SH.

In conclusion, PAA was more effective sanitizing solution as compared to others. Thus, PAA could be used as an alternative sanitizing solution other than chlo-

FURTHER INFORMATION

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