

Cornell University College of Agriculture and Life Sciences

Improving Safety in New York Food Products IMPACTS 2005



SUMMARY

Cornell researchers are working to enhance the microbial safety of fruits and vegetables to help ensure a safer food supply. Methods to decontaminate fresh and minimally processed fruits and vegetables that are effective and easy to implement are being investigated as means to prevent or reduce foodborne illnesses that result from their consumption.

THE ISSUE

The consumption of fresh and minimally processed fruits and vegetables continues to carry a risk of foodborne illness. Two fruit and vegetable commodities that have been implicated in numerous multi-state outbreaks involving New York are apple cider and seed sprouts.

Apple cider can be pasteurized for safety, but the resulting flavor change makes the juice less desirable to consumers and producers. In addition, small cider producers sometimes find the cost of purchasing a pasteurizer prohibitive.

Similarly, raw seed sprouts such as alfalfa and mung bean have been implicated in large foodborne illness outbreaks. There is currently no effective means to decontaminate the seeds or finished seed sprouts that does not alter the finished quality or sprouting efficiency.



THE RESPONSE

Microbiologists at Geneva have developed a non-thermal, ultraviolet processing unit and proven its effectiveness in achieving the required level of safety for Food and Drug Administration regulations. We have recently investigated how variations in parameters such as UV sensitivities of different pathogen strains, cider acidity levels, and apple varieties affect the effectiveness of the ultraviolet processing method in reducing pathogens. We found that, despite the variations mentioned above, the ultraviolet processing unit was consistently capable of achieving a greater than 99.999% reduction in *E. coli* O157:H7 strains.

Microbiologists at Geneva have also tested the effectiveness of treating sprouts with mild heat (50°C) for 72 hours and found that method eliminated 99.999% of the pathogens (*Salmonella* and *E. coli* O157:H7) on the seeds and prevented the pathogens from increasing in number under sprouting conditions. The decontamination method identified does not require complex equipment and eliminates the need for using high levels of chlorine as is currently done in sprout production facilities.

IMPACTS

- There are currently more than 175 ultraviolet processing units in use across the U.S. This research provides additional data to support the original findings showing that this non-thermal processing method achieves pathogen reduction equivalent to that of traditional pasteurization methods.
- Within New York, the number of apple cider producers has increased in the past 10 years while the numbers have decreased in other cider-producing states. New York State has 90 ultraviolet processing units in use – the highest number of any state. It could be extrapolated that the development of ultraviolet light technology and the quick approval by the New York State Department of Agriculture and Markets has improved the viability of New York’s apple cider industry.
- The seed sprout decontamination work has been well received by the seed sprout industry. Additional scale-up decontamination studies are being performed to assess the safety and feasibility of this thermal treatment method.

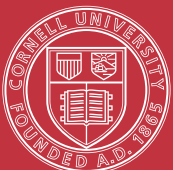
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