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Non-Living Edible Surrogates For Process Validation Food Processing Plants

Tech ID: 30055 / UC Case 2019-082-0

ABSTRACT

Researchers at the University of California, Davis have developed a surface sanitation validation system that utilizes a non-living edible surrogate to potentially help determine food processing efficacy.

FULL DESCRIPTION

Fresh produce has emerged as a leading cause of foodborne illnesses in the US. These illnesses result from contamination of fresh produce with various pathogenic bacteria, parasites, and viruses. In the food industry, process validation helps ensure the quality, safety, and efficacy of food processes. This is often done by introducing a harmless surrogate to a food batch pre-processing that has similar chemical resistances to common pathogens and viruses, and then testing the concentrations of that surrogate found post-processing. Bacterial are commonly used in process validation for thermal processing. However, this method requires costly specialized equipment and multiple days to complete. Bacterial surrogates are also less effective for fresh produce because of the lengthy processing time and the fact that fresh produce must be validated numerous times during their processing. Curently, there are no process validation standards for minimally processed foods, which includes products such as fresh produce, raw meat and seafood that are quick and cost effective.

Researchers at the University of California, Davis have developed a surface sanitation validation system that utilizes a non-living edible surrogate to improve food processing efficacy. These non-living surrogates can take any relevant shape to match the need of food contact surfaces- such as an artificial leaf for fresh produce, or a round shape or a flat sticky leaf to blend in with fruit. The composition of these surrogates mimics the binding of viruses and bacteria to food. Multiple biochemical surrogates including DNA can be applied to the non-living surrogate and the decomposition of these surrogates post-processing can provide data that can be analyzed through a simple user friendly interface. That data can be used to help determine the efficacy of the food process without needing to introduce numerous bacteria or biochemical surrogates to a whole food batch. These surrogate compositions are customizable and can predict the lethality of a variety of process parameters quickly and efficiently.

APPLICATIONS

- ▶ Surrogates for process validation and sanitation validation

FEATURES/BENEFITS

- ▶ Rapid detection in minutes to hours
- ▶ Diverse array of surrogate compositions and forms to help validate of a variety process parameters

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	2022001883	01/20/2022	2019-082

RELATED MATERIALS

- ▶ Ovissipour M, Rai R, Nitin N (June 2019). DNA-based surrogate indicator for sanitation verification and predict inactivation of Escherichia coli O157:H7 using vibrational spectroscopy (FTIR). Food Control 100, 66-77. - 12/21/2018

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INVENTORS

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OTHER INFORMATION

KEYWORDS

Process validation, surrogate, food processing, biochemical surrogates, sanitation

CATEGORIZED AS

- ▶ **Agriculture & Animal Science**
 - ▶ Devices
 - ▶ Processing and Packaging
- ▶ **Sensors & Instrumentation**
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