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Innovative Rapid Cooling Technology for Thermally Processed Food

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Categories:
- Food and Nutrition

Keywords:
- Food and Nutrition
- Food Processing
- Food Safety
- Heat Exchanger
- Nutrition
- Thermal Food Processing

Improving the quality of thermally processed food and maximizing nutrient retention while maintaining food safety standards is important to the food industry. This is typically done by optimizing the time-temperature profile during the thermal process. There are numerous methods for doing this; however, they all have shortcomings. Retort thermal processing is one of the oldest forms of processing low acid food. However, due to the heat load in retorted containers, the quality of the product is often compromised in order to achieve commercial sterility. Recent advancements in aseptic thermal processing technology focus on rapid heating such as, microwave and ohmic heating, but the lethality of the process continues to accumulate in the cooling section even after commercial sterility has been achieved in the hold tube of the system. Some aseptic systems use flash chambers that utilize steam infusion or steam injection; flash chambers cannot be used on continuous flow systems with other types of heat exchangers. There is need for a cooling technology that can further maximize the nutrient retention and provide better quality food to consumers.

Researchers at Purdue University have developed a rapid cooling heat exchanger to enhance the quality of thermally processed food products. Rapid cooling technology solves the problem associated with quality degradation of food products due to higher temperatures and time in continuous flow systems. This technology will work as a modular unit on any existing continuous flow system; it will be easy to install at existing manufacturing facilities with minimal intervention. In addition, this technology provides opportunities to save energy cost and make the manufacturing process more sustainable. This rapid cooling technology will provide food manufacturers with a way to naturally improve the quality of thermally processed food, including the optimization of nutrients and improved properties, e.g., viscosity, color, antioxidants, carotenoid and chlorophyll retention.

Advantages:
-Naturally improves the quality of thermally processed food
-Optimized nutrients and improved properties of thermally processed food
-Compatible with existing continuous flow systems
-Reduced energy cost
-More sustainable manufacturing process

Potential Applications:
-Food manufacturers

People:

- Mishra, Dharmendra Kumar (Project leader)
- Applegate, Bruce Michael
- Chapa, James D
- Ozadali, Ferhan
- San Martin-Gonzalez, Fernanda

Intellectual Property:

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Contact OTC:

Purdue Office of Technology Commercialization
The Convergence Center
101 Foundry Drive, Suite 2500
West Lafayette, IN 47906

Phone: (765) 588-3475
Fax: (765) 463-3486
Email: otcip@prf.org