

## **Determination and Validation of Optimum Time and Temperature Combination for a Processed Sweet Corn Product**

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Boiled sweet corn is a favourite food in Europe. Sri Lanka recently cultivates sweet corn targeting to produce ready-to-eat entire sweet corn cobs as well as canned sweet corn in a brine solution. Because of low acidity (5.9 - 6.2), sweet corn is susceptible to the growth of spoilage and pathogenic microorganisms. In the food industry, thermal processing is the most common process which enable to manufacture microbiologically safe food and extend the useful shelf-life of foods. The research was conducted to find out the optimum time and temperature combination for the retorting process of ready-to-eat sweet corn cob pouches and to validate the process. The selection of raw materials, the effect of the blanching process, suitable time and temperature combinations for the retort process, physicochemical parameters for the final product, and sensory attributes such as colour, flavour, texture, and overall acceptability were assessed and compared among different time and temperature treatments. Sensory evaluation was done by using a hedonic ranking test and a 9-point hedonic rating test. Water that was used to clean and process steps were microbiologically safe as well as the processing environment also microbiologically safe. According to the results, 115 °C for 25 min and 116 °C for 15 min could be used effectively in the retort process. There was no significant difference ( $p>0.05$ ) in physicochemical properties such as texture and salinity among the above treatments, but considering the sensory evaluation done using hedonic test, it was confirmed that most consumers preferred sweet corn processed at 116 °C for 15 min. Furthermore, the results of microbial validation support proving that the selected time and temperature combination would be adequate to destroy the spores of *Clostridium perfringens* and to maintain the expected shelf-life of 10 months.

**Keywords:** Sweet corn, Time and temperature combination, Validation

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