# Technology Development and Process Modification for Ensuring Safety and Prolonging the Shelf-life of Fermented Vegetables Produce by Small and Medium Enterprises (SMEs) in Cambodia

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## Abstract

Fermented vegetable, which is one of the most important products of processing, is a very popular dish in Cambodia. These include, but not limited to, cucumber pickles, radish pickles, mustard/green cabbage pickles and ginger pickles. These products are instability because of spoilage and pathogenic microbial contamination and thereby have to be consumed and sold shortly after processing. There is no information and reported of preservation or prevent from spoilage and presence of food borne pathogens in retailed cucumber pickles in Cambodia. The study focused on the development of methods for ensuring safety and prolonging shelf-life stability of cucumber pickle by modifies the heat treatment mix with safety chemical preservation. The specific objective of this proposed research is: 1) To determine the combined effects of heat treatments (pasteurization) and generally regarded as safe chemical preservation such as sodium benzoate and sorbic acid on spoilage and pathogenic microorganisms present in cucumber pickle; 2)To identify the effects of heat treatments and addition of chemical preservation on the sensory properties of the derived cucumber pickle; 3) To check the effects of storage conditions on the quality and acceptability of cucumber pickle; and 4) To reconize the consumers attitudes (modes of consumption) and preferences regarding the consumption of cucumber pickle and the derived products. Laboratory experimentation will be performed to investigate the effects of heat treatments with and without chemical preservation on the safety, shelf-life stability of cucumber pickles (Table 3). All of the treatments will be treated alike and done in triplicates. The samples will be then stored at different conditions for at least a month to study their shelf life stability. The safety and quality will evaluated on 1) Microbiological Analysis; 2) Proximate Analysis of cucumber pickles;3) Typical chemical component; and 4) Sensory Evaluation of cucumber pickles. Expected results: 1) Microbial safety of the cucumber pickles from various treatments; 2) Improved quality and sensory properties of the cucumber pickles due to process modification done; 3) Identified the shelflife of the treated cucumber pickles as influenced by storage conditions; 4) Operation manual of standardized or developed methods for ensuring safety and prolonging shelf-life of cucumber pickles is produced; 5) Consumers' attitudes (modes of consumption) and preferences regarding the consumption of cucumber pickle and the derived products is identified; and 6) Published articles 2- 3 articles.