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Increasing shelf life of cooked beans by means of rapid cooling

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Microorganisms which are resistant to cooking conditions proliferate rapidly during cooling period until they are put into the refrigerator. The temperature range of 8°C-68°C at which microorganisms grow and proliferate rapidly is known as "danger zone" in literature. The objective of this study was to observe the effect of rapid cooling of hot meal on microbial load, pH and color change. Cooked white beans containing meat will be brought to 68°C at room temperature and then they will be cooled to 8°C using three different cooling rates (10°C/h, 30° C/h and 50°C/h) and then stored in the refrigerator. Hot meal cooked at the same condition, cooled down to 40°C at room temperature and then stored in the refrigerator was used as a control. The microbial load including the analysis of total mesophilic bacteria, total mold and yeast, *Pseudomonas* spp. and lactic acid bacteria (LAB) as well as pH and color values of meal during storage at 4±1°C were recorded. LAB growth was not observed in white bean meal while *Pseudomonas* spp. was found to be the dominant bacteria. Increasing cooling rate was found to decrease color change. At the end of thirty days of storage at 4±1°C, the meal cooled at the rate of 10°C/h showed 2340 cfu/g total bacteria growth while the meals cooled at the rate of 30°C/h and 50°C/h showed no growth during this time. In conclusion, rapid cooling was found to be an effective way of increasing shelf life of hot meal.

Biography

Serpil Sahin has completed her PhD in 1997 from Middle East Technical University, Department of Food Engineering. She is a Professor in the same department. She has published 77 papers in reputed journals and 7 book chapters. She is one of the authors of *Physical Properties of Foods* published by Springer and one of the Editors of *Food Engineering Aspects of Baking of Sweet Goods* and also Advances in *Deep-Fat Frying of Foods* published by Taylor and Francis.

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