

Abstract

Lotus (*Nelumbo nucifera* or *Nelumbium specisum*) stem is used as a vegetable with a good demand in the local market. Freshly harvested lotus stem can be kept only for 2 or 3 days in good quality in the ambient conditions. Due to its healthy friendly nature as a vegetable, development of method to increase its shelf-life is of significance. Therefore this study was carried out to find a good non-chemical preservation method with a better compatibility to domestic application. The main consideration was given to thermal treatments to the stems and storage in chilled and frozen conditions by using a domestic refrigerator.

Freshly harvested and cleaned lotus stems were subjected to two different heat treatments such as blanching and pressure cooking. Blanching was intended to block the self destructive biochemical changes connected with internal enzymes of the stem, whereas pressure cooking was applied to form a pre-cooked stage while upgrading its microbiological quality. One batch was treated only with blanching in order to have a comparison with both treatments.

The treated samples then were packed using 30 μ Biaxial Oriented Polypropylene (BOPP) packaging bags in sliced form. Applied storage conditions were ambient (27°C), chilled (4°C) and frozen by using domestic refrigerator. Subsequently these samples were routinely tested for Total Bacterial Counts to identify microbiological quality and its variation with time in different storage conditions.

The sample stored in ambient conditions was found spoiled within 7 days giving total bacterial count up to 10⁸. But chilled sample showed 10⁶ of bacterial count in 5 days and reduced again to 10² during 26 days of storage time. Simultaneously the frozen sample had maximum of 10³ bacterial count and also reduced to 10¹ in 26 days. It can be assumed that the reduction of counts is due to formation of anaerobic atmosphere inside the package.

According to the sensory evaluation, frozen product had performed better than chilled product and it can be concluded that the proper blanching and pressure cooking followed by frozen storage conditions are the most successful method to preserve lotus stems for domestic application