

The methods of preservation of shredded vegetables using deep seawaters:
The preventive effects against decomposition

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Summary

The shredded vegetables has been well consumed in supermarkets and family restaurants. However, it is the most crucial topics to deteriorate the qualities during processing and transportation. It has been used NaOCl solution to wash the shredded vegetables, but it is possibility to stay behind chlorine in shredded vegetables. Recently, deep seawater has been popular in foods industries. In the present study, we tried to preserve the shredded vegetables using some deep seawater.

Very fresh vegetables (lettuce, Chinese cabbage, cabbage, cucumber, carrot, and bean sprout) were purchased from the local wholesale market in Shimonoseki City, Yamaguchi Prefecture, Japan, and used immediately. Seven kinds of deep seawaters were used in this study.

The hardness of some deep seawaters were the range of 10.5-935.9 mg/l. A large amounts of mineral components were contained in these deep seawaters; in particular the main mineral components were Na, Ca, Mg, and K. The antioxidant properties of these deep seawaters were investigated using four different methods, autoxidation test, superoxide anion radical, DPPH radical, and hydroxyl radical scavenging tests. However, it showed no effect against autoxidation and some radicals. When the disinfectant effects on six kinds of shredded vegetables were investigated, the microbial counts were reduced from about 1/10 to 1/1000 of the initial numbers. Moreover, after treatment by deep seawaters, the storage effects on the shredded vegetables were investigated during 7 days. As a result, the microbial counts were reduced from about 1/100 to 1/10000 of the initial numbers. It was simultaneously determined the total polyphenol contents and polyphenol oxidase activities on the shredded vegetables after treatment by deep seawaters. From these results, it suggests that several deep seawaters have potential in replacing NaOCl solution as a disinfectant.