

The Effect of Salt on the Tastes, Fermentation,
and Discoloration of Pickled Vegetables

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Summary

Presently, refined salts are generally used for processed foods. However, for some processed foods particular types of salts are used. These salts are produced using methods that have not changed in more than fifty years. As these salts are not refined after dehydrated in salt farms, they contain higher proportion of the bitter, and as such are used for their reputation ensuring good taste. In order though, to determine whether or not salts containing this common component (impurity) do in fact have an efficacious impact on food processing, we conducted a series of studies on pickled vegetables.

1. Fermentation

Assuming that the salt containing higher proportion of the common components accelerates the lactic acid fermentation of vegetables, we conducted a study on sauerkraut. However, acceleration of lactic acid fermentation was not observed at all.

2. Discoloration

In Japan, in case of pickled vegetables of leaves and stems of plants, ones that keep the vivid green color of chlorophyll are preferred. We therefore conducted a series of tests to determine whether salts containing higher proportion of the common components have efficacy of keeping chlorophyll due to the effect of magnesium. The result insisted that magnesium has some effects for keeping chlorophyll in vegetables.

3. Taste

It has been said that pickles made by using salt that contains a large quantity of brine taste better than those made with the ordinary refined salt sold in the grocery store. However, no taste tests have ever been performed to determine the differences. We conducted a taste test, using 20

judges who had received training in taste tests, on the three items: Pickled Chinese cabbage, pickled raddish, and "shibazuke" (pickled assorted vegetables). We used three types of salt to make the pickles -- (A) ordinary table salt, (B) salt containing many components, and (C) commercially available natural salt. We comparatively evaluated each pickle by pairing two of the three samples, using 1) the duo-trio method for an identification test, and 2) comparative evaluation of two samples.

In the case of the pickled Chinese cabbage, C and A were significantly different. A and B tended to be distinguishable. For pickled raddish, A and B were significantly different. The three samples of shibazuke were not distinguishable.

In terms of the comparative evaluation, some of the pickled Chinese cabbage samples were significantly different in the desirability of their color, the intensity of acidity, and the smoothness of taste. There was no significant difference in any of the tests for pickled raddish and shibazuke. In the case of the pickled Chinese cabbage, we presume that different levels in the formation of acid in the pickling process made the samples distinguishable.

The rather large volume of salt in the case of pickled raddish, and the sodium glutamate added in the case of shibazuke, appear to have erased the subtle differences in taste.