

Dehydration of Vegetables in Saline Solution (Continuation)
Rheological Properties of Daikon in Saline Solutions

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Summary

In our earlier paper, dealing with the dehydration of vegetables in saline solutions, it was shown that the osmotic pressures of 27 vegetables were in the range of 5 to 12 atm, and in case of Daikon, the rates of the dehydration were constant at the concentration of saline over 2.5% (14 atm of osmotic pressure). By dehydration, the rheological properties of vegetables might be changed and be effected to resistance to the teeth.

The object of this paper is to describe changes of rheological properties of Daikon by dehydration in saline solutions during 105 days.

Daikons were soaked in 10% and saturated saline solutions in a cold room (approximately 10°C) for 105 days. During soaking, rheological properties, that is, creep and power of shearing were measured with the passage of time. The results were as follows;

The creep curves of pickled Daikons could be analyzed by six-element model with Maxwell and Voigt elements. Elastic moduluses of instantaneous deformation (E_0) and retarded elasticities, (E_1) and (E_2) which are seemed to be contributed to the sensibility of mastication were plotted with time. E_0 , E_1 , E_2 were steeply decreased from the order of 10^7 to 10^5 (dyne/cm²) during a week in the saline solutions, after that the values of elastic moduluses gradually increased up to about 80 days, then gradually decreased again. The powers of shearing were also steeply increased during a week in saline solutions, after that the powers of shearing gradually decreased up to 80 days, then gradually increased again. From these results, it was assumed that the change of elastic modulus and change of tissue of Daikon might be complicated twined with one another.