Mechanism for Permeation of Sodium Chloride into Food

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Summary

Cubes of 2% agar gel, side length (2L) of 1,2,3,5,7 and 10cm were soaked in a 0.1M sodium chloride solution at 25° C. After soaking for 0~75 hours (t), the amount of sodium chloride and water in the gel were measured, and the mean concentration of sodium chloride in the gel cube was calculated. The ratio of the mean concentration to the boundary concentration (C_r) depended on the value of t/L^2. The value of apparent diffusion coefficient (D_{app}), yielded by substituting the values of t/L^2 and C_r into the solution of diffusion equation, depended on t/L^2 and C_r and reached the maximum ($1.03 \times 10^{-5} cm^2/s$) at near Cr=0.60. The relationship between C_r and $D_{app}t/L^2$, which is shown in this report, can be applied to the diffusion of any substances in various food materials other than agar gels or sodium chloride.