Quantitative analysis of the antiputrefactive effect of salts on the basis of the real-time and digital observation of food putrefaction.

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Summary

Putrefaction processes of foods were digitally observed in real time by a microcalorimetric method using the metabolic heat of microbes as a probe. Five gram of a foodstuff such as *asari* clam was autoclaved at 120˚C for 20 min in the absence and presence of various concentration of salt, followed by inoculation.

The putrefactive thermograms were good measure for recognizing the putrefaction process visually and were useful for numerical analysis. For the case of *asari* clam, for example, the putrefactive rate constant μ in the absence of salt was evaluated to be 0.28 h^{-1}. Increased concentration of salt decreased the rate, and 50%-anticeptic concentration *K* and the minimum inhibition concentration MIC were evaluated to be 3.4% and 7.0%, respectively, at 25 ˚C. The values of these parameters were also evaluated for several foodstuffs such as clam (*hamaguri*), milk, soymilk, *nameko* mushroom, tomato, and melon. These kinds of data will enable us to predict the degree of putrefaction of foods. We plan to construct a data base that provides the values of the putrefactive parameters and to calculate the degree of putrefaction as a function of time and the concentration of antiseptic agent or seasoning.