

Effect of salts on the emulsifying properties of Diacylglycerol in the presence of egg yolk

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Summary

Introduction Sodium chloride (NaCl) is an essential compound for producing a salty taste, and is a major ingredient as salt seasoning. Various kinds of salt containing other salts (KCl, CaCl₂, CaSO₄, MgCl₂, MgSO₄) are now commercially available. However, there are few reports on the salty taste of commercial salts. In this study, effect of various kind of commercial salts on the salty taste of simulated mayonnaise prepared with triacylglycerol (TAG) and diacylglycerol (DAG) was investigated.

Materials and Methods Aqueous solutions of NaCl, KCl, CaCl₂, CaSO₄, MgCl₂, MgSO₄ and commercial salts at a concentration of 0.8% were used. DAG and TAG samples with the same fatty acid composition were used. Simulated mayonnaise samples were prepared with the oil, egg yolk and a 3.5% acetic acid solution containing each salt at a concentration of 0.8 and 2.0%. The samples were sensorially evaluated for taste and preference. Panelists consisted of 12 students and 3 faculty staffs of Showa Women's University, Tokyo. The flow behavior of the emulsion was measured with a cone-and-plate viscometer.

Results and Discussion Sensory evaluation showed that 0.8% NaCl solution was salty but not bitter nor sour. However, the CaCl₂, MgCl₂, MgSO₄ solutions were very bitter. The saltiness in the six commercial salt solutions was weaker compared to that in the NaCl solution. Bitterness in the salt B solution which contained the highest KCl among the commercial salt samples was obviously strong compared to that in the NaCl solution. The saltiness of the commercial salts in the TAG and DAG emulsions prepared with lower salt concentration (0.8%) was not significantly different from the saltiness of NaCl in the TAG and DAG emulsions. The bitterness of the commercial salts in the TAG and DAG emulsions was also not different from that of the NaCl in the TAG and DAG emulsions, though the bitterness of the salt B in those emulsions was significantly strong compared to that of NaCl in the emulsion. In the TAG emulsions with higher salt concentration (2.0%), the bitterness of the salt B was not different from that of NaCl. It is suggested from these results that differentiation of taste is more difficult when samples are more viscous.