

## Study of Taste of Cooked Rice and Scientific Regulation of Foodborne Bacteria in Cooked Rice Containing Sodium Chloride, Food Additives and Seasonings.

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### Summary

In Japan, staphylococcal food poisoning (SFP) occurs in cooked rice products such as rice balls and lunch packs. To prevent SFP, it is important to inhibit the growth and staphylococcal enterotoxin A (SEA) by *Staphylococcus aureus* in cooked rice. The purpose of this study was to identify the combination of salt and commercial seasonings that are effective in inhibiting growth and SEA production of *S. aureus* without changing the taste of cooked rice.

To screen for seasonings that are effective in inhibiting growth of *S. aureus*, 80 types of commercial seasonings were added to 1.5% NaCl-added rice, inoculated with *S. aureus* at the rate of  $10^6$  CFU/g and incubated at 37°C. Among the 80 seasonings added to 1.5% NaCl-added cooked rice, only 10 seasonings were effective in inhibiting growth of *S. aureus*, even after 48 h of incubation. Furthermore, we examined the effect of concentrations of some commercial seasonings on growth in 1.5% NaCl-added cooked rice. The bacterial population decreased depending on the concentration of the commercial seasonings. With rice vinegar, balsamic vinegar, mustard paste and rose hip tea, *S. aureus* did not grow, but survived up to 12 h after incubation. After 12-24 h of incubation, *S. aureus* gradually decreased. In 1.5% NaCl and rice vinegar-added or mustard paste-added cooked rice, SEA production was effectively inhibited compared with no-seasoning added rice. In particular, balsamic vinegar and rose hip tea inhibited SEA production more effectively. Finally, creative rice balls and Japanese traditional dessert were made by 1.5% NaCl and cooked rice with seasonings. It was confirmed by sensory evaluation that the deliciousness and saltiness of these did not impair.

Addition of 1.5% NaCl to cooked rice did not inhibit growth and SEA production. However, it was clarified that the growth and SEA production can be inhibited in cooked rice flavored with some commercial seasonings without impairing the taste of cooked rice as food.