Importance of Sodium Chloride on Taste of Foods
-Enhancing effects of sodium chloride on tastes of amino acids and umami substances-

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Summary

The effects of salts on canine taste responses to amino acids were examined by recording the activity of the chorda tympani nerve. The responses to most amino acids examined were significantly enhanced by the presence of NaCl. The degree of the enhancement varied with species of amino acid. The degree of the enhancement also varied with species of anion of sodium salts. The responses to amino acids in the presence of NaCl reached highest value at 100 mM NaCl and a further increase of concentration decreased the responses. The responses to umami substances such as monosodium glutamate and disodium guanylate were also enhancement by NaCl.

The effects of salts on sweet taste of amino acids (glycine, alanine and serine) were examined by the psychophysical method. The sweetness of the amino acids was greatly increased with an increase of NaCl concentration. The sweetness of 100 mM amino acids in the presence of 30 mM NaCl was equivalent to that of 500-600 mM amino acids containing no salt. On the other hand, sodium phosphate little affected sweetness of the amino acids.

The results obtained were discussed in point of view of taste of foods. It was reported that taste of most foods was determined by combination of amino acids, umami substances and salts contained in foods. Elimination of NaCl from foods greatly decreases taste of amino acids and umami substances in foods and hence greatly weakens taste of foods. On the other hand, the official guidelines have recommended a daily allowance of 6 grams of NaCl because NaCl raises blood pressure. The present results suggest that the extreme reduction in salt intake greatly decreases deliciousness of foods. Is there strong evidence that the extreme reduction in salt intake bring about benefit for hypertensives ? There are many reports saying that the extreme reduction in salt intake does not bring about a measurable decrease in blood pressure. In addition, it was reported that the extreme reduction of salt intake increases mortality in a general population. These results with the present our results suggest that the extreme reduction in salt intake is not necessary for quality of life.