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Effect of “Bittern” and Magnesium Salts on Sodium Chloride Taste Perception

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Summary

1) Effect of bittern on the taste nerve responses to NaCl and MSG (mono-sodium chloride):

Effect of “bittern”, “Nigari” in Japanese, on salt or umami taste perception through the chorda tympani nerve was studied in SD rats. Two kinds of standard artificial bittern, i.e., ion-exchange type and sea-water concentrated type were used throughout the study. After the addition of various concentration of ion-exchange type of bittern solution, the taste nerve response to sodium chloride was decreased significantly. The taste nerve response data showed that this was possibly due to its $MgCl_2$, $CaCl_2$, and KCl components or chloride ion contribution. As for the addition of bittern solution to the MSG solution, the MSG response was increased by the addition, and this was probably due to its sodium- and chloride ions components, though further experiment is necessary.

2) Effect of single oral application of bittern solution on the monoamines secretion in the hypothalamus:

The real time analysis by microdialysis-HPLC system was performed to clarify the contribution of monoamines secretion on the decrease of sodium chloride preference after oral application of both types of bittern application. After the analyses, dopamine secretion in the ventro-medial hypothalamus (VMH) region was clearly decreased by an oral application of both type of bittern when compared with the control group (water application). This was significantly observed after 15, 30, and 45 minutes of the application. These data suggest that the decrease of sodium chloride preference seen soon after the oral application of both type of bittern solutions could be attributable to the decrease of dopamine secretion especially in the ventro-medial hypothalamus region.