Neurophysiological analysis of the taste and lingual trigeminal nerves responses to various grade of edible salts (purified NaCl, Nami-en, Funsai-en, and dried deep sea water) in rats.

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Summary

To elucidate the differences in the taste and lingual trigeminal nerves responses to various grade of salts (purified NaCl (> 99.5%), Nami-en (> 95% of NaCl), Funsai-en (> 93% of NaCl), and dried deep sea water) and its effect on the irritation sensation through the tongue, the electrophysiological studies were undertaken using Wistar rats. Deep sea water was taken from 700 m depth of Yaizu Bay of Shizuoka Prefecture, and dried in our laboratory to use it as a solid salt.

The present study showed for the first time that solid salts of NaCl (5 bundles out of 19), Nami-en (6/19), Funsai-en (5/19), and Deep sea water (1/19) can cause strong chemical sensation through the lingual trigeminal nerve which is not related to tactile sensation. The lingual trigeminal reception of carbonated water with or without ethanol was also modified by the pre-treatment of solid salts (NaCl, Namien, and Funsai-en). The taste nerve responses to various grade of salts solution were also analyzed by recordings from the whole bundle of chorda tympani nerve, and found that there was no clear change among NaCl, Nami-en, and Funsai-en, whereas deep sea water of the same solid concentration had less integrated response though without statistical significance.