

Central nervous mechanisms of formation of taste quality and taste hedonics
during ingestion of NaCl

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Summary

NaCl elicits salty taste, which is one of the fundamental taste qualities. It also induces hedonic aspects of taste such as preferable at lower concentrations and aversive at higher concentrations. It is not well understood how these qualitative and hedonic evaluation of NaCl are processed in the central nervous system. The present study aims to elucidate central representation of taste quality and hedonics of NaCl by localizing c-fos protein (FOS protein) as an anatomical marker in the parabrachial nucleus (second-order taste relay station). Wistar male rats were used. We have tried to localize FOS protein, which is produced as a result of a rapid induction of a proto-oncogene c-fos after ingestion of various taste solutions including NaCl. C-fos neurons were found in the 3 sub-nuclei; the medial subnucleus receives taste information of Na ions, the dorsal lateral subnucleus may be concerned with pleasant hedonic aspect of taste of low concentrations of NaCl as well as other palatable solutions, and the caudodorsal part of the external lateral subnucleus may be related to unpleasant hedonic aspect of taste of high concentrations of NaCl. Generally speaking, the medial part of the parabrachial nucleus seems to be concerned with palatable tastes and positive hedonics, while the lateral part is related to aversive tastes with hedonically negative value, and gastrointestinal distress.