

Evaluation of Age Dependent Change of Taste System

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Summary

Previous studies have shown that aging modifies taste sensitivity. However, the factors affecting the changes in taste sensitivity remain unclear. To investigate the cause of the age-related changes in taste sensitivity, we compared the peripheral taste detection systems in young and old mice. First, we examined whether taste sensitivity varied according to age using the behavioral assay. We confirmed that the taste sensitivities to salty and bitter tastes decreased with aging. On the other hand, the gustatory nerve responses to salty and sweet tastes increased significantly with aging, while those to bitter taste did not change. Thus, the profile of the gustatory nerve responses was inconsistent with the profile of the behavioral responses. Next, we evaluated the expressions of taste-related molecules in the taste buds. Apparent differences in the expressions of representative taste receptors were not observed between the two age groups. No significant differences in the turnover rates of taste bud cells were observed between the two age groups. Thus, we did not observe any large decreases in the expressions of taste-related molecules and turnover rates of taste bud cells with aging. Based on these findings, we conclude that changes in taste sensitivity with aging were not caused by aging-related degradation of peripheral taste organs. Meanwhile, the concentrations of several serum components that modify taste responses changed with age. Thus, taste signal-modifying factors such as serum components may have a contributing role in aging-related changes in taste sensitivity.