

Ecological role of human sensory response to taste.

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Summary

Taste recognition threshold is the important measure of human sensory response, and several determination procedures have been used in the previous studies. However, very little information is available as to the validity of the results derived from a wide variation in the determination procedures, from simple to complex/from time-saving to time-consuming. On the other hand, higher taste thresholds or decreased taste sensitivity in elderly has been reported in the previous studies. However, age-related taste alteration remains still controversial. Much of these researches have used inappropriate methodology, thus leaving many findings inconclusive and inappropriate explanation.

As the first step of our study, we have conducted to evaluate the several determination procedures for taste recognition threshold (TRT) which can be used as a tool in field settings. The second objective is to compare TRT by age on four basic tastes using we determined the best procedure of the first experiment. Further more, we have examined intensity at suprathreshold levels with more complex food and the urinary Na and K excretion rate in relation to the NaCl TRT. In view of the reliability, cost, and time expended for TRT, our choice for the best TRT test-procedure was the method using up-down procedure, with distilled water rinses between all stimuli and swallow test solution. TRTs on four basic tastes were measured in pre-school children, young-adults and elderly subjects. One-way ANOVA analyses indicate that variations due to age in the NaCl and PTC TRT were significant. The NaCl and PTC TRT of elderly group were significantly higher than those of young-adults. The PTC TRT of pre-school children was significantly higher than those of young-adults. TRTs on other taste solution were not significantly different by age. Perceived intensity for seven levels of NaCl solution, Japanese consommé soup, sucrose solution and tea was determined in 10 female young-adults, 10 elderly males and 10 elderly females. Perceived intensity of 3% sucrose solution and 3.5% sucrose in tea were rated as stronger in female young-adults than in elderly group. There were no significant differences in perceived intensity for NaCl solution and Japanese consommé soup by age. Urinary Na and K excretion was examined on subjects with perceived intensity test, fed on the experimental diets. Urinary Na and K excretion evaluated as percentage of Na and K intake were not statistically different by age. But for the inter-individual variation of excretion rate, elderly group showed a greater coefficient of variation than in female young-adults. There was no significant correlation between the TRTs and urinary Na and K excretion rate.