

Sensory Evaluation of Melanoidins on Basic Taste with or without Salt

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Summary

Typical nonenzymatic reaction occurring among food components is caused by amino and carbonyl compounds, called Maillard reaction. Melanoidins, which are final products of the Maillard reaction, are nitrogen-containing polymeric substances that decompose with difficulty. Maillard reaction occurs extensively in food systems and *in vivo*. In order to clarify the participation in taste with melanoidins, taste of melanoidins and the interaction of melanoidins with fundamental taste such as bitterness and umami were investigated by the sensory evaluation, statistical analysis, and intermolecular interaction with Biacore.

A nondialyzable melanoidins were prepared from the reaction mixture of 2M of D-glucose and 2M of glycine with 0.2M of sodium hydrogen carbonate at 95°C for 7 hr. Sensory evaluation of caffeine and monosodium glutamate (MSG) has been carried out at seven levels on the intensity of bitterness and umami with or without melanoidins, respectively. Sensory evaluation was done according to Ura's modified method of paired comparison by Scheffe's test. The concentration of caffeine and monosodium glutamate was prepared at 0.075% and 0.072%, respectively. Then, melanoidins were prepared at the concentration below detective threshold. The number of panel members was 12 and the panel members wore with nose clip and eye mask. Statistical analysis was done with F test and ANOVA.

The present study revealed that melanoidins were suppressed the bitterness of caffeine and also suppressed the intensity of umami of MSG. However, melanoidins did not affected on the intensity of umami of MSG in the presence of NaCl. Interaction between melanoidins and caffeine or MSG was not observed with Biacore by using melanoidins as ligand and caffeine or MSG as analyte. These findings indicate that the suppression effects of melanoidins on bitterness and umami are not due to the interaction between melanoidins and their taste substances but are possibly observed by the binding of melanoidins to bitterness and umami receptors.