Poster

Poster session

Mon. Sep 18, 2023 8:30 AM - 3:50 PM Poster Presentation (131講義室)

[P3-3-30]Correlations of sensations of hardness and springiness of agar and gelatin gels with mechanical properties in human subjects

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It is unclear which mechanical properties of foods cause the texture sensation in human. This study aimed to investigate the relationship between unilateral compression measurements and sensations of hardness and springiness of gels. Methods: Agar and gelatin gels with three different concentrations were prepared by adding agar (1%, 2%, and 3%) and gelatin (4%, 8%, and 16%) to water or apple juice. In a stress-rupture test, stress-strain curves were obtained by applying uniaxial compression with a disc plunger at a compression rate of 10 mm/s. The sensations of hardness and springiness and palatability of the gels were evaluated by using a visual analog scale in twelve healthy volunteers. The sensation of hardness was positively correlated with the sensation of springiness in both agar and gelatin gels. Palatability was decreased with increasing sensation of hardness in agar and gelatin gels. For the mechanical properties, the sensation of hardness was only significantly correlated with the initial elastic modulus, and the sensation of springiness was correlated with the late elastic modulus and other mechanical properties, such as fracture strain, time, and stress. These results suggest that sensations of hardness and springiness are produced in the initial and late stages, respectively, during the food crushing process with the tongue, palate, and teeth.

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