

論文名 : Inter-individual variation of bolus properties in triggering swallow during chewing in healthy humans (咀嚼時における嚥下閾値の個人差の検討)

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This study was aimed to analyze changes in physical properties of the bolus during chewing and to evaluate how the inter-individual variation of chewing behaviors affects the swallowing initiation. Twenty-nine healthy volunteers were asked to take 8 g of the steamed rice. Based on the chewing duration defined by the time duration until the first swallow, they were asked to chew the food, and then spit it out in order to measure the rheology of the bolus (spiting test), or swallow it (swallowing test) at 50%, 100% and 150% of chewing duration. A significant difference in the chewing performance was noted in the chewing cycle time which was significantly longer in the free chewing test than in the spiting and swallowing tests. With respect to changes in physical property of the bolus, the hardness gradually decreased throughout the recordings. Although the chewing duration widely ranged, there was a significant negative correlation between the time and hardness regardless of the difference in individual chewing duration. The cohesiveness did not change 100%, followed by a slight but significant increase. There was no significant correlation between the real time sequence and adhesiveness, in that no time dependent changes in the adhesiveness was observed. Swallow related muscle activity was not related to the chewing duration and bolus property. The current results suggest that variation of chewing duration and swallowing initiation may not be dependent on the food property but on the individual chewing manner.