Distribution of cerebral blood flow during gum-chewing
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Abstract: The physiological mechanism for the prevention of obesity by increasing the chewing frequency has recently been clarified, and its hygienic characteristics have been reported. Research into masticatory movement has not been initiated only due to its involvement in health promotion, but is also being increasingly investigated as a factor influencing the development and maintenance of brain function. Chewing training is not only useful for middle-aged and elderly obese individuals, but also employed as educational instruction at health centers and schools. In this study, in order to elucidate the influence of masticatory movement on the brain, we examined young males during gum-chewing. Electromyography of their masticatory muscles and near-infrared spectroscopy were simultaneously conducted to investigate the relationship between chewing and local cerebral blood flow. The influence of masticatory movement on the brain was confirmed by examining images of the brain obtained on magnetic resonance imaging. Through these findings, gum chewing was suggested to reduce stress.

Keywords: Mastication, Cerebral blood flow, Electromyograms (EMG), Near-infrared spectroscopy (NIRS), Magnetic resonance imaging (MRI)