

SS1-6 Cortical Modification of Triggering Pharyngeal Swallowing by Umami Taste

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Swallowing is a complex motor sequence composed of oral, pharyngeal, esophageal stages, with both volitional and reflexive components. Motor output pattern of pharyngeal swallowing is generated by the central pattern generator (CPG) in the lower brain stem. The CPG of swallowing has been thought to receive facilitatory or inhibitory inputs from cortical or suprabulbar neural structures, which regulate the threshold to trigger the swallowing CPG.

Videofluorogram using contrast media with and without umami taste (monosodium glutamate: MSG) were underwent in normal control subjects and patients with dysphagia. The result showed that the parameter indicating the latency to trigger pharyngeal swallowing using MSG (+) medium were not significantly shorter than that using MSG (-) medium in normal subjects, while the parameter with MSG (+) were significantly shorter than that with MSG (-) medium in dysphagia patients. Similarly magnetoencephalogram (MEG) study showed that interval between the beginning of the pharyngeal swallowing and preceding current dipole, which was identified in the anterior operculum and adjacent regions, was shorter in subjects with MSG than in those without MSG.

These results indicate that umami taste activates the corticobulbar pathway to facilitate triggering the CPG of pharyngeal swallowing.