

## **Expression of Fos-like protein in the brain stem caused by mechanical stimulation to the lower airway in guinea pig**

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We have previously reported that mechanical stimulation to the larynx or the bifurcation of trachea caused cough responses, which are different in pharmacological properties, coughs induced by stimulation to the bifurcation of the trachea are resistant to codeine treatment. In this study, we investigated the regions of the nucleus tractus solitarius (NTS) where afferent fibers of cough reflex project, by using Fos-like protein (FLP) as an indicator. [Method] Male Hartley guinea pigs, weighing 300-450g, were used. Coughing was caused by mechanical stimulation to the larynx or the bifurcation of trachea. FLP was detected by a conventional immunohistochemical method. [Results] Cough stimulation to the both sites of airway increased the number of FLP positive cells in NTS at the level of 1600 $\mu$ m rostral from the obex. To discriminate the difference in an increase in the number of FLP positive cells between the subregions of the NTS, the region of NTS was divided into 8 regions. Stimulation to the Larynx increased the number of the FLP positive cells in three regions that are localized in the medial part of the NTS. On the other hand, an increase in the number in the lateral part of the NTS was found after stimulation to the tracheal bifurcation. The result suggests that the cough-related afferent fibers arising from the larynx and the bifurcation of trachea may project different subregions of the NTS.