

## Hypothalamic dopaminergic functions negatively regulate feeding behavior

Naomi Yonemochi<sup>1</sup>, Junzo Kamei<sup>2</sup>, Hiroko Ikeda<sup>1</sup>

<sup>1</sup>Dept. Pathophysiol. Ther., Hoshi Univ., <sup>2</sup>Dept. Biomol. Pharmacol., Hoshi Univ.

Role of central nervous systems in regulation of energy homeostasis including feeding behavior has paid much attention these days, but their mechanisms are still unclear. Since the hypothalamus is a key regulator in feeding behavior, we investigated the role of dopaminergic functions in the lateral hypothalamus (LH) in feeding behavior. Both food intake and glucose injection increased dopamine levels in the LH. When retrograde tracer Fluoro-Gold (FG) was injected to the LH, the FG-positive cells were present in the ventral tegmental area (VTA) and the substantia nigra pars compacta (SNc), which were tyrosine hydroxylase-positive. Injections of both dopamine D<sub>1</sub> (SKF 38393) and D<sub>2</sub> (quinpirole) receptor agonists into the LH decreased food intake, which were antagonized by respective antagonist. When the dopaminergic activity in the LH was inhibited by a Ca<sup>2+</sup> channel inhibitor pregabalin, pregabalin inhibited the increase of dopamine levels induced by glucose injection, and it also increased food intake. These results have indicated that food intake activates dopamine neurons projecting from the VTA and the SNc to the LH through increase in the blood glucose levels. Moreover, it is suggested that the promotion of dopaminergic functions in the LH terminates feeding behavior by the stimulation of dopamine D<sub>1</sub> and D<sub>2</sub> receptors.