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Study on the role of ghrelin in lateral parabrachial nucleus on nocturnal feeding and energy homeostasis in C57BL/6J mice

Jing Dong, Caishun Zhang and Yuan liu
Qingdao University, China

Ghrelin is a pepetide of 28 amino acids, which is mainly produced by stomach X/A-like cells. It plays a pivotal role in the regulation of food intake and energy metabolism. Lateral parabrachial nucleus(LPBN) is a key regulator of feeding behaviour and energy metabolism. In the present study, in order to investigate the effects of ghrelin in LPBN on food intake and further mechanism, we examined the effect of ghrelin injection into the LPBN on nucturnal feeding behaviour in C57BL/6J mice and GHSR-/- mouse or C57BL/6J injected with [D-Lys3]-GHRP-6. Furthermore, we explored the effect of ghrelin on the firing rate of glucose-sensitive(GS) neurons in the LPBN by the in-vivo electrophysiological technique. As results, in the feeding experiment, 300 pmol ghrelin injected into the LPBN significantly increased the cumulative food intake at 1st, 2nd, 3rd hour compared with the 0.9% NaCl group. But the orexigenic effect could be blocked by [D-Lys3]-GHRP-6 and abolished in GHSR-/- mice injected with ghrelin in the LPBN. We record 40 GS neurons in LPBN, 37.5% of them were gluose-excited(GE) neurons and 40% of them were glucose-inhibited(GI) neurons. Ghrelin (1.5×10-8M) could significantly increase the firing rate of GE neurons and decrease the rate of GI neurons compared with the control group.

Biography

Jing Dong of Leuven University and Qingdao University is mainly engaged in research related to the mechanisms and signalling pathways of brain-gut peptides involved in food intake and peripheral fat metabolism. In the past three years, she has hosted two projects of the National Natural Science Foundation of China and published six SCI articles as first author or corresponding author in international and domestic academic journals in recent three years.

yuanliu_qdu2017@163.com