

One-day high-fat diet induces inflammation in the nodose ganglion and hypothalamus of mice

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学 位 論 文 要 旨

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<p>[論文題名] One-day high-fat diet induces inflammation in the nodose ganglion and hypothalamus of mice. Biochemical and Biophysical Research Communications, 464(4):1157-62, 2015</p> <p>[要 旨] A high-fat diet (HFD) induces inflammation in systemic organs including the hypothalamus, resulting in obesity and diabetes. The vagus nerve connects the visceral organs and central nervous system, and the gastric-derived orexigenic peptide ghrelin transmits its starvation signals to the hypothalamus via the vagal afferent nerve. Here we investigated the inflammatory response in vagal afferent neurons and the hypothalamus in mice (C57BL/6J male) following one day of HFD (60% of calories as fat) feeding. This treatment increased the number of macrophages/microglia in the nodose ganglion and hypothalamus. Furthermore, one-day HFD induced expression of Toll-like receptor 4 in the goblet cells of the colon and upregulated mRNA expressions of the proinflammatory markers <i>Emr1</i>, <i>Iba1</i>, <i>Il6</i>, and <i>Tnfα</i> in the nodose ganglion and hypothalamus. Both a subcutaneous administration of ghrelin and celiac vagotomy reduced HFD-induced inflammation in these tissues. HFD intake triggered inflammatory responses in the gut, nodose ganglion, and subsequently in the hypothalamus within 24 h. These findings suggest that the vagal afferent nerve may transfer gut-derived inflammatory signals to the hypothalamus via the nodose ganglion, and that ghrelin may protect against HFD-induced inflammation.</p>			

備考 論文要旨は、和文にあつては2,000字程度、英文にあつては1,200語程度とする。