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学位論文の題名	<p>Effect of overexpression of lipoprotein lipase (LPL) on Aβ burden and memory function in LPL and APP-double-transgenic mice (LPL 高発現マウスおよび LPL/APP ダブルトランスジェニックマウスを用いた LPL の Aβ 沈着および認知機能への影響)</p> <p>Journal of Systems and Integrative Neuroscience, 2 (4): 213-218, 2016</p>
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Abstract

Lipoprotein lipase (LPL) is a member of a lipase family known to hydrolyze triglyceride molecules in plasma lipoproteins. LPL is predominantly expressed in adipose and muscle tissues, but is also highly expressed in the brain, where its specific roles are as yet unknown (Rebeck et al, *Ann. Neurol.* 1995). Previously, we found that LPL is a novel A β -binding protein that plays a role in A β clearance and degradation *in vitro* (Nishitsuji et al, *J Biol Chem*, 2011). In this study, we generated LPL/APP-double-transgenic (Tg) mice and determined the effects of LPL overexpression on A β deposition and memory function *in vivo*. The LPL expression level was significantly higher in the brains of LPL/APP-double-Tg mice than in the brains of APP-Tg mice. However, unexpectedly, the levels of A β 1-40 and A β 1-42 in the brains of LPL/APP-double-Tg mice were similar to those of APP-Tg mice. It is also the case for the levels of A β deposition demonstrated by immunohistochemical analysis in the brains of these mice. In contrast, the passive avoidance test showed that memory impairment found in APP-Tg mice was improved in LPL/APP-double-Tg mice, whereas the novel objection recognition test showed no significant difference between these two groups. Our findings indicate that LPL does not seem to play a critical role in the brain to remove extracellular A β , but may have an effect to attenuate memory impairment in APP-Tg mice.