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# Lysophosphatidylserine (LysoPS) suppresses IL-2 production from activated T lymphocytes via a novel LysoPS receptor, GPR174

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## Abstract

Lysophospholipids, such as sphingosine 1-phosphate (S1P) and lysophosphatidic acid (LPA), are important lipid mediators with a number of biological roles exerted through their cognate G protein-coupled receptors (GPCRs). Lysophosphatidylserine (LysoPS), a deacylated form of phosphatidylserine is reported to induce cellular responses such as enhancement of mast cell degranulation or stimulation of cell migration *in vitro*. However, little is known about its receptors and *in vivo* roles. We recently identified two orphan GPCRs, P2Y10 and GPR174, using a new GPCR assay. Because both P2Y10 and GPR174 are highly expressed in activated T lymphocytes, we examined the effect of LysoPS on activated T lymphocytes. We found that LysoPS suppressed IL-2 production from anti-CD3/CD28 stimulated splenic $CD4^+$ T cells in a dose dependent manner. The suppression of IL-2 production was not induced by other lysophospholipids. In addition, LysoPS-induced suppression of IL-2 was not observed in $GPR174^{-/-}$ T cells, showing that the effect of LysoPS is mediated by GPR174. The present study suggests a novel role of LysoPS as an immunomodulator via GPR174.