Regulation of receptor chaperone molecule RTP4 in microglial cells under the inflammatory stress

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Receptor transporter protein 4 (RTP4) is one of the GPCR chaperone molecules that is involved in regulation of membrane expression of taste receptor and opioid receptors. We have focused on its role in regulation of heteromers consisting of mu and delta opioid receptor in neuronal cells and revealed that the possible involvement of RTP4 in the antinociceptive tolerance to morphine. Although it is quite highly expressed in non-neuronal cells like macrophages than neuronal cells, its role in such an immunocompetent cell has not been elucidated yet. Here we focused on the role of RTP4 in microglia, the resident macrophages of the CNS, and examined the changes of RTP4 mRNA levels under the in vitro inflammatory stress induced by lipopolysaccharide (LPS) (1 to 1000 ng/mL, 0-48 hrs). As a result, RTP4 mRNA levels in SIM-A9 microglial cell-line were significantly increased by LPS treatment in a time- and concentration-dependent manner. On the other hand, LPS did not induce any changes of the RTP4 mRNA expression levels in neuro2a neuronal cell-line. Since recent publications clearly revealed that RTP4 can be induced by type I interferon (IFN) as the immune response, it may possible that the involvement of type I IFN-mediated signal in the RTP4 upregulation in SIM-A9 cells by LPS, while it remains to be determined in the future.