The role of steroidogenic acute regulatory protein-related lipid transfer domain containing 10(STARD10) in the development of nonalcoholic steatohepatitis (NASH)

Masanori Ito, Daisuke Ohshima, Taichiro Tomida, Yoshinori Mikami, Satomi Adachi-Akahane

Department of Physiology, Faculty of Medicine, Toho University

Non-alcoholic fatty liver disease (NAFLD) is associated with lipid accumulation in hepatocyte. NAFLD advances into NASH. It has been implicated that *STARD10* gene expression is epigenetically regulated by methylation in the liver of NAFLD patients. We found STARD10 is highly expressed in the liver and involved in bile acid metabolism by regulating PPARα activity. Our study also indicated that STARD10 is involved in lipid droplet (LD) formation.The purpose of this study was to elucidate the role of STARD10 in the development of NASH. We compared the lipid accumulation in the liver of NASH model mice that were induced by choline-deficient L-amino acid-defined diet (CDAA) between WT and *Stard10*$^{-/-}$ mice. The total LD area of *Stard10*$^{-/-}$ mice was significantly smaller than that of WT mice. Gene expression levels of proinflammatory cytokines and fibrosis marker genes were significantly lower in the liver of *Stard10*$^{-/-}$ mice compared with WT mice. Since cytokines released from Kupffer cells progress NASH, we confirmed that there is no *Stard10* expression in Kupffer cells. Lipopolysaccharide induced the gene expression of proinflammatory cytokines in the Kupffer cells isolated from WT mice and *Stard10*$^{-/-}$ mice in the same manner. In conclusion, STARD10 is involved in the development of NASH by regulating LD formation in hepatocyte.