学 位 論 文 の 要 旨

三 重 大 学

所 属	三重大学大学院医学系研究科 甲 生命医科学専攻 ゲノム再生医学講座 薬理ゲノミクス分野	氏 名	平 光 正 典

主論文の題名

Eriocitrin ameliorates diet-induced hepatic steatosis with activation of mitochondrial biogenesis

主論文の要旨

Lemon (Citrus limon) contains various bioactive flavonoids, and prevents obesity and obesity-associated metabolic diseases. We focused on eriocitrin (eriodictyol 7-rutinoside), a powerful antioxidative flavonoid in lemon with lipid-lowering effects in a rat model of high-fat diet. To investigate the mechanism of action of eriocitrin, we conducted feeding experiments on zebrafish with diet-induced obesity. Oral administration of eriocitrin (32 mg/kg/day for 28 days) improved dyslipidaemia and decreased lipid droplets in the liver. DNA microarray analysis revealed that eriocitrin increased mRNA of mitochondrial biogenesis genes, such as mitochondria transcription factor, nuclear respiratory factor 1, cytochrome c oxidase subunit 4, and ATP synthase. In HepG2 cells, eriocitrin also induced the corresponding orthologues, and reduced lipid accumulation under conditions of lipid loading. Eriocitrin increased mitochondrial size and mtDNA content, which resulted in ATP production in HepG2 cells and zebrafish. In summary, dietary eriocitrin ameliorates diet-induced hepatic steatosis with activation of mitochondrial biogenesis.