

GINKGETIN, A BIFLAVONE FROM GINKGO *BILOBA* LEAVES, PREVENTS ADIPOGENESIS THROUGH STAT5-MEDIATED PPAR γ AND C/EBP α REGULATION

Young-Lai Cho¹, Jong-Gil Park¹, Min Ji Cho^{1,2}, Jeong-Ki Min^{1, 2}
and Kwang-Hee Bae¹

¹Korea Research Institute of Bioscience and Biotechnology, Republic of Korea

²University of Science & Technology (UST), Republic of Korea

Adipogenesis involved in hypertrophy and hyperplasia of adipocytes is responsible for expanding the mass of adipose tissues in obese individuals. Peroxisome proliferator-activated receptor γ (PPAR γ) and CCAAT/enhancer-binding protein α (C/EBP α) are two principal transcription factors induced by delicate signaling pathways, including signal transducer and activator of transcription 5 (STAT5), in adipogenesis. Here, we demonstrated a novel role of ginkgetin, as a STAT5 inhibitor that blocks the differentiation of preadipocytes into adipocytes. During the differentiation, ginkgetin treatment during the first 2 days markedly inhibited the formation of lipid-bearing adipocytes. PPAR γ and C/EBP α expression was decreased in 3T3-L1 cells during adipogenesis following ginkgetin treatment. Inhibition of PPAR γ and C/EBP α expression by ginkgetin occurred through the prevention of STAT5 activation during the initiation phase of adipogenesis. In addition, ginkgetin-mediated the inhibition of adipogenesis was recapitulated in the differentiation of primary adipocytes. Lastly, we confirmed the inhibitory effects of ginkgetin on the hypertrophy of white adipose tissues from high-fat diet-fed mice. These results indicate that ginkgetin is a potential anti-adipogenesis and anti-obesity drug.

Biography

Education : 2009 Ph.D., Molecular and Cellular Biochemistry, Kangwon National University. 2005 M.S., Molecular and Cellular Biochemistry, Kangwon National University. 2003 B.S., Biochemistry, Kangwon National University. 2017 – present Research Center for Metabolic Regulation. Korea Research Institute of Bioscience & Biotechnology (KRIBB), 2013 – 2017 Chemistry, Dongguk University, 2012 – 2013 BioNanotechnology Research Center, 1. Cho YL, Kim YP, Son JG, Son M, Lee TG. (2017) On-Chip Peptide Mass Spectrometry Imaging for Protein Kinase Inhibitor Screening. Anal Chem. 89(1):799-806. 2. Cho YL, Min JK, Roh KM, Kim WK, Han BS, Bae KH, Lee SC, Chung SJ, Kang.

ylcho@kribb.re.kr