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## Anacardic acid, a phenolic compound found in the shell of the cashew nut inhibits adipocyte differentiation via modulation of histone H3K9 acetylation

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In the present study, we evaluated the anti-obesity effect of Anacardic acid, a phenolic lipid found in cashew nut (*Anacardium occidentale*) and elucidated the underlying mechanisms focused on the epigenetic enzymes. We sought to investigate the effect of Anacardic acid on 3T3-L1 adipocyte differentiation. Oil-red O staining revealed that Anacardic acid reduced MDI-stimulated lipid accumulation in 3T3-L1 cells, in the absence of observable cytotoxicity. Western blot analysis showed that fatty acid synthase (FAS) and peroxisome proliferator activated receptor gamma (PPAR $\gamma$ ) expressions were significantly increased by 7 days in MDI-stimulated 3T3-L1 cells, whereas treatment of Anacardic acid markedly decreased the MDI-stimulated FAS and PPAR $\gamma$  expressions. In addition, total lysine acetylations were significantly enhanced in MDI-stimulated 3T3-L1 cells, and were decreased by Anacardic acid. Interestingly, histone H3K9 acetylation, an epigenetic modification marker was significantly increased by 7 days in MDI-stimulated 3T3-L1 cells, whereas treatment of Anacardic acid markedly decreased the MDI-stimulated Histone H3K9 acetylation. Taken together, these results suggest that Anacardic acid inhibits the MDI-stimulated adipocyte differentiation in 3T3-L1, and may involve the targeting of histone H3K9 acetylation.

### Biography

Jin-Taek Hwang is a Scientist in the Field of Functional Food Research. He received his PhD in Biochemistry and Molecular Biology from Kyung Hee University. He is currently working in the Korea Food Research Institute. His current efforts are focused on identifying the active compounds against metabolic syndrome. He is also interested in the study of nutritional epigenetics.

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