Hesperetin inhibit adipocyte proliferation and differentiation by down regulating adipogenic genes in human mesenchymal stem cells

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In this study, the effect of hesperetin on the inhibition of adipocyte differentiation during chemically induced adipocyte differentiation in human mesenchymal stem cells (hMSCs) was examined. Hesperetin treatment (5, 10 and 20 μmol/L) to differentiating preadipocyte cells resulted in a significant (p<0.05) decrease in GPDH and triglyceride levels as well as an increase in LDH activity and attenuated lipid accumulation compared with untreated differentiated adipocytes. Treatment with hesperetin at 20 μM attenuated lipid accumulation in differentiated adipocytes as assayed by Oil Red O staining compared with untreated differentiated adipocytes. Using quantitative RT-PCR, we studied the mRNA expression levels of Resistin, Adiponectin, aP2, LPL, PPARγ and TNFα in hMSCs undergoing adipocyte differentiation; treatment with hesperetin attenuated the expression of those adipogenic genes and decreased adipocyte differentiation. Hesperetin significantly inhibited hMSCs proliferation and preadipocyte differentiation within the first 2 days of treatment, indicating that the anti-adipogenic effects of hesperetin are achieved through the inhibition of proliferation.

Biography
Subash Babu Pandurangan is an Assistant Professor in Department of Food and Human Nutrition, King Saud University, Riyadh, Saudi Arabia. He completed his PhD in Clinical Biochemistry, University of Madras, India. He has published more than 20 international publications and having a patent on natural product. His research interests are on drug development for metabolic syndrome and cancer.