

Time-Dependent Effect of sonic vibration on 3T3-L1 cells

오은선¹, 서영권^{1,2}, 윤희훈², 윤문영², 박정극^{1,2,*}

¹동국대학교; ²동국대학교 파동생명연구센터

(jkpark@dongguk.edu*)

Recently the effects of mechanical stimulation on cells have studied in vitro and in vivo. The aim of this study was to investigate the effect of sonic vibration on proliferation of 3T3-L1 preadipocytes. The experiment group was divided into three groups, 1) 1 hr treatment three times per day, 2) 3 hr treatment per day, and 3) 24 hr treatment per day. On day 3 after sonic vibration, the cell proliferation was measured by BrdU assay. As results, sonic vibration showed different results depending on exposure time and intensity. The proliferation rate of 3T3-L1 cells subjected to 20, 30 and 40 Hz with 0.5 volt for 3 h increased compared to control. On the other hand, that of cells subjected to 10, 20, 30 and 40 Hz with 1.7 volt for 3 h decreased. Also the mRNA expression of adiponin, leptin, C/EBP- α , ADD-1, FAS, LPL, PPAR- γ and aP2 were measured on day 3. Similar to proliferation rate, the sonic vibration enhanced expression of C/EBP- α , leptin, ADD-1 and FAS in 3T3-L1 cells at 10, 30 and 40 Hz on 0.5 volt but reduced at 10, 20, 30 and 40 Hz with 1.7 volt. In conclusion, the sonic vibration could differently affect proliferation and mRNA expression of 3T3-L1 cells depending on exposure time and intensity.