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Effect of sodium butyrate on histone acetylation in L6 myotube

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Exercise training promotes adaptive changes in skeletal muscle that result in an improved carbohydrate and lipid utilization. The molecular mechanisms mediating the cellular adaptations to exercise training in skeletal muscle are partially due to transcriptional regulation. Recently, it was suggested that the pattern of histone modifications are involved in gene expression, and histone acetylation at promoter regions has been associated with transcriptional activation. Because previous study reported that sodium butyrate inhibits histone deacetylation in cultured cells, it is plausible that exposure to the sodium butyrate promote the acetylation of histones in skeletal muscle. Therefore, the purpose of this study was to examine effect of sodium butyrate on histone acetylation status in L6 myotube. After the rat skeletal muscle cell differentiated to the myotubes, the L6 cells exposed to 0 (Control), 500 μM and 1 mM sodium butyrate for 24h. Western blotting was performed to evaluate whether the exposure to sodium butyrate affects histone acetylation status in the L6 cells. After 24h exposure, although exposure to 500 μM sodium butyrate did not influence histone acetylation, the level of acetylated histone H3 was higher in the cells after treatment with 1 mM sodium butyrate than that in control cells ($p<0.05$). Since sodium butyrate induces histone acetylation in the L6 cells, it is likely that exposure to sodium butyrate associated with transcriptional activation in skeletal muscle.