

Abstract

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Effects of trace elements on the telomere lengths of hepatocytes L-02 and hepatoma cells SMMC-7721.

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OBJECTIVE AND METHODS: The effects of selenium, zinc, iron, chromium, and lead on telomere lengths of human cells have not been investigated. This article adopted flow cytometry and fluorescence in situ hybridization to investigate the impact of different elements on cellular apoptosis and telomere lengths of human hepatocytes L-02 and hepatoma cells SMMC-7721.

RESULTS: Results showed that these trace elements under the following dosages did not have remarkable effect on cellular apoptosis. However, sodium selenite at doses of 0.5 and 2.5 micromol/L significantly extended the telomere length of hepatocytes L-02; 0.5 micromol/L lead acetate remarkably shortened the telomere length of L-02 cells; 80 micromol/L zinc sulfate, 20 micromol/L ferric chloride, and 200 micromol/L chromic chloride only had slight impact on the telomere length, respectively. Regarding hepatoma cells SMMC-7721, sodium selenite at 0.5 and 2.5 micromol/L had little impact on the telomere length; 80 micromol/L zinc sulfate significantly accelerated the loss of telomere length, whereas 20 micromol/L ferric chloride, 200 micromol/L chromic chloride, and 0.5 micromol/L lead acetate remarkably extended the telomere lengths, respectively.

CONCLUSION: The results revealed differential effects of each trace element on the life-span of human hepatocytes and hepatoma cell lines, which suggested further research on somatic hepatocytes and hepatoma in vivo.

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