بررسی تاثیر افزایش سرب بر روند پراکسیداسیون لیپیدهای سرم: یک مطالعه برون‌النطیجه

به استناد،...
Effect of the increased level of Lead on in-vitro serum lipid peroxidation

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Abstract:

Background: Lead is a heavy metal that enters the human body through the environmental pollution such as air. Lead contamination is associated with the increased cardiovascular diseases, but the exact mechanism is not fully clarified. The aim of this study was to evaluate the effect of Lead on lipid peroxidation.

Materials and Methods: In this in vitro experimental study, a pool serum was prepared from the healthy subjects and divided into the five fractions. With the addition of Lead, its concentrations in the four samples reached to 0.5, 1, 4 and 5 μM and the fifth sample was used as control. Samples were incubated at 37 °C for one day. Lipid oxidation was induced in each diluted sample by the addition of Cu2+. Oxidation profile was monitored by reading of OD at 245nm. A number of quantitative parameters including the lag-time, maximal rate of oxidation (V-max), and maximal amount of lipid peroxide products (OD-max) were evaluated.

Results: The lag-times in the Lead samples were 4 and 5 μM (158±1.7) and (149.3±1.3) decreased compared to the control (169.7±0.5). Moreover, OD-max in the samples (0.399±0.003) and (0.409±0.008) increased compared to the control (0.373±0.01, P<0.05).

Conclusion: The results show that Lead in high concentrations can trigger serum lipid oxidation. Since the experimental concentrations were in the borderline of toxicity to humans, Lead contamination may increase the risk of cardiovascular disease by enhanced lipid peroxidation.

Keywords: Lead, Serum lipid, Peroxidation