Postmitotic tissue selenium and manganese levels in alpha-lipoic acid-supplemented aged rats.

Cakatay U, Kayali R, Kiziler AR, Aydemir B.

Source

Istanbul University, Istanbul Faculty of Medicine, Central Laboratory of Biochemistry, Capa, Istanbul, Turkey. cakatay@yahoo.com

Abstract

Redistribution of selenium and manganese in postmitotic tissues of alpha-lipoic acid-supplemented aged rats has been proposed to contribute to metal-catalyzed protein oxidation. DL-Alpha-lipoic acid (LA) (100 mg/[kg body wt.day]) was administered intraperitoneally to the Sprague-Dawley rats for 14 days. Serum selenium levels were lowered in the aged rats with LA supplementation compared with those of the rats without LA supplementation. Similarly, the selenium levels of the heart, brain and muscle were found to be significantly lower in LA-supplemented rats when compared to control rats. On the other hand, serum manganese levels were not changed in the aged rats with LA supplementation compared with those of the rats without LA supplementation. The heart manganese levels detected in LA-supplemented rats were significantly lower than controls. Manganese levels of the brain and muscle tissues were increased in the aged rats with LA supplementation compared with those of the rats without LA supplementation. Based on the findings of our study, we conclude that LA may exhibit pro-oxidant effect depending on the altered selenium and manganese homeostasis. Thus, our results stress the importance of monitoring the dose of LA supplementation and serum selenium levels, duration of treatment and its potential harmful pro-oxidant effects in the postmitotic tissues of aged rats.

PMID:17996229