

## **The Impact of Alkaline Water Supplemented with Sodium Ascorbate on Glucose and Cortisol Levels in the Blood Serum During Acute Hyperthermic Exposure of White Laboratory Rats**

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**Abstract :** Stress can be a reason for some physiological and biological disorders in the body. The antioxidative defense system is necessary for the maintenance of redox homeostasis in organisms. Because of its antioxidant effect, alkaline water (AW) is the focus of scientific interest. Adding AW and co-treatment with sodium ascorbate (SA) is expected for the organism to act preventively to hyperthermic stress. To investigate the effect of AW and SA on glucose and cortisol levels during acute hyperthermic stress, white female Wistar laboratory rats, divided into three groups of 10 individuals, were exposed to heat for 80 min, for 21 days. Acute hyperthermic exposure at 41 °C was a cause for oxidative stress. The first group is the control group, the second group is treated with AW, and the third group with AW and SA. Plasma glucose levels were determined by colorimetric method and cortisol was measured using the enzyme-linked immunosorbent assay method. The comparison of the means was made using the Tukey test. Differences were considered significant at a level of  $p < 0.05$ . Our results show that levels of glucose and cortisol have been increased in the group treated with AW on the 21st day after treatment ( $p < 0.0001$ ), but not on the 7th and 14th day as compared to the control group. Also, co-treatment of animals with AW and SA significantly increased the levels of glucose and cortisol on the 21st day after treatment showing a synergistic effect. The individual action of AW, as well as synergism with SA, caused a high protective effect on oxidative damage.

**Keywords :** alkaline water, sodium ascorbate, hyperthermic stress, glucose, cortisol

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