

عنوان مقاله:

Fullerene C₆₀ nanoparticles potentiate the antioxidant defense system of brain and liver by increment of catalase activity in normal rats

محل انتشار:

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خلاصه مقاله:

Background: It has been demonstrated that fullerene C₆₀ nanoparticles and their derivatives showed the antioxidant properties in a wide range of the in vitro and in vivo studies. **Objectives:** Hence, we examined the effects of oral administration of fullerene C₆₀ nanoparticles for eight weeks on antioxidant capacity of brain and liver through assessment of catalase activity in normal rats. **Methods:** The experiment was performed in two groups of Wistar rats (each group, n=6); untreated and treated normal animals. Treated rats received orally fullerene C₆₀ nanoparticles via oral gavage at dose of 1 mg/kg/day. Blood glucose and body weight of rats were measured during the study. At termination of the study, catalase activity of brain and liver was determined using the method of Aebi. **Results:** Treatment with fullerene C₆₀ did not change blood glucose of treated rats compared to untreated animals. The rats of both groups showed similarly progressive weight gain during the study. Fullerene administration significantly increased catalase activity in the brains of treated rats (0.34 ± 0.10 U/mg protein) compared to untreated animals (0.12 ± 0.03 U/mg protein), ($p < 0.05$). Fullerene C₆₀ also significantly increased the mean value of catalase activity in the livers of treated rats (6.14 ± 0.76 U/mg protein) compared to untreated animals (2.07 ± 1.43 U/mg protein) ($p < 0.05$). **Conclusion:** Fullerene C₆₀ nanoparticles potentiate the antioxidant capacity of brain and liver through enhancement of catalase activity. Hence, fullerene C₆₀ can be used for prevention of damage to brain and liver against ROS accumulation and oxidative stress in various pathological situations.

کلمات کلیدی:

Fullerene, nanomaterial, Antioxidant Capacity, Catalase, oxidative stress

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