

Impact of Caffeic acid on spermatogenesis in D-galactose induced aging model in mice

Abstract

Background: Aging is a biological phenomenon that causes various disorders and diseases in body systems such as the reproductive system. One of the important factors in aging is oxidative stress, which facilitates the aging process through various mechanisms.

Aim: The aim of this study is the investigation of Caffeic acid on the Testicular Damages in D-galactose induced aging model in mice.

Materials and methods: 32 male mice were randomly divided into 4 groups (n=8): 1) Control, 2) Aging, 3) Aging + Caffeic acid and 4) Caffeic acid. Aging was induced through daily injection of D-Galactose (300mg/kg, intraperitoneal) for 6 weeks. Caffeic acid (60 mg/kg, intraperitoneal) was injected daily for 6 weeks. One day after the last injection mice were killed and testicle and epididymis were removed. Then, sperm parameters, factors of oxidative stress, and histopathological changes were evaluated.

Results: The results showed that aging significantly decreased the count, motility, and viability of sperm, and increased the abnormal sperm and sperm DNA fragmentation in contrast to the control group ($P<0.05$). In addition, MDA levels increased significantly in this group, and SOD, GPx, and TAC activity decreased ($P<0.05$). Histological studies also showed the destruction of seminiferous tubules and Johnson's score decreased ($P<0.05$). Caffeic acid administration significantly improved the above disarrays ($P<0.05$).

Conclusion: The results showed that Caffeic acid reduces the adverse effects of aging on spermatogenesis in mice by reducing oxidative stress and increasing antioxidant defenses.

Keywords: Aging, D-galactose, Oxidative stress, Caffeic acid, Spermatogenesis.