

Original Paper

# Independent and combined effect of aerobic exercise and garlic extract on the level of renal vascular endothelial growth factor and transforming growth factor- 1 in the elderly rats

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## Abstract

**Background and Objective:** Aging elderly is associated with impaired angiogenesis, glomerulosclerosis and increased susceptibility to nephrotoxic injury. This study was done to compare the independent and combined effect of aerobic exercise and garlic extract on the levels of renal vascular endothelial growth factor (VEGF) and transforming growth factor- 1 (TGF- 1) in elderly rats.

**Methods:** In this experimental study, 35 aged elderly male Wistar rats were randomly allocated into 5 groups including control, sham, garlic (2.5 g/kg/bw), aerobic exercise, garlic plus exercise. The animals exercised by swimming training at 5 min to 60 min per day, 3 days a week over 8 weeks. Animals in garlic plus exercise were received garlic extract (2.5 g/kg/bw) and swimming training. The renal TGF- 1 and VEGF level were evaluated by ELIZA method.

**Results:** 8 weeks swimming training, garlic supplementation and the combined intervention were associated with a significant increased the renal VEGF and reduced TGF- 1 level ( $P < 0.05$ ). There was no difference between swimming training, garlic supplementation and garlic plus exercise on renal VEGF and TGF- 1 levels in aged rats.

**Conclusion:** It seems that the protective role of regular swimming training, garlic supplementation and the combined intervention in the renal aging process might in part be related to their ability to attenuate TGF- 1 and up regulating VEGF.

**Keywords:** Kidney, Aging, Garlic, Aerobic exercise, Vascular endothelial growth factor, Transforming growth factor- 1

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