

Summary of of M.Sc. thesis No. 6581, Faculty of Veterinary Medicine, Urmia University.

The academic year: 2022-2023

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Title of thesis: Effect of Moderate-intensity Exercise Training Protocol on Ketamine-induced Adverse Impacts on Mitochondria-dependent Apoptosis in Testicular Tissue of Mature Male Rats

Summary:

The extensive growth of both ketamine (KET) uses clinically (beyond its anesthetic use) and non-medical (recreational exposure) make further studies focusing on its toxicity in various organs inevitable. Considering that, current study was designed to clarify the effect of moderate-intensity exercise training (MIET) protocol on KET-induced adverse impacts on mitochondria-dependent apoptosis in testicular tissue of mature male rats. Twenty-four adult male Wistar rats were divided into four equal groups including non-treated control group, KET group receiving 50 mg/kg/day KET intra-peritoneally (IP) for 8 weeks, withdrawal group receiving KET (50 mg/kg/day; IP) for 8 weeks followed by a 8-week drug-free period and KET-MIET group receiving KET (50 mg/kg/day; IP) for 8 weeks followed by a 8-week MIET (moderate-intensity running on a treadmill once daily (5 days/week)). The Bcl-2, Bax, p53 and caspase-3 expressions in testicular tissue were determined using reverse transcription polymerase chain reaction and immunohistochemistry techniques. Malondialdehyde and glutathione levels were also monitored in testicular tissue. The MIET up-regulated Bcl-2 and down-regulated Bax, p53 and caspase-3 expressions compared to KET and withdrawal groups. These findings indicate that MIET is able to potentially ameliorate KET-induced apoptosis in Rats testicular tissue through intrinsic apoptosis pathway suppression.

Keywords: Apoptosis; Exercise; Ketamine; Rat; Testis