

Summary of the DVM thesis No. 12295, Faculty of Veterinary Medicine, Urmia University.

The academic year: 2023-2024

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Title of thesis: The impact of melatonin on oxidative stress caused by ovariohysterectomy in felines

Summary:

Melatonin serves various functions in vertebrate bodies, primarily acting as an antioxidant and free radical scavenger. Due to the oxidative stress caused by ovariohysterectomy surgery in female cats, this study aimed to investigate the effectiveness of melatonin in confronting this stress. For this purpose, 20 adult female cats of approximately the same age and weight were randomly divided into four equal groups: The first group only underwent ovariohysterectomy, the second group received melatonin in addition to ovariohysterectomy, the third group only received melatonin, and the fourth group, as the control group, were neither ovariohysterectomized nor received melatonin. Melatonin was administered 3 mg per cat daily on days of -1, 0, 1, 2 and 3 (five days in total) and blood sampling was done on days of -1, 1, 3 and 5 (four times in total). Blood samples were collected in two EDTA and gel tubes (clot) and after separating the serum from the gel tube, the blood and serum samples were kept at -20 °C. Malondialdehyde (MDA), total antioxidant capacity (TAC), glutathione peroxidase (GPX), superoxide dismutase (SOD) and catalase (CAT) factors were measured to assess the level of oxidative stress.

Assessment of the results indicates that the level of MDA has increased after ovariohysterectomy in two groups that underwent surgery. In comparison of these two groups, the increase in MDA levels in the group that received melatonin in addition to surgery was up to 1/5 times lower. The TAC level in the group that only underwent surgery decreased significantly by day 3 compared to other groups, while the group that only received melatonin had a noticeable increase by day 5. The levels of SOD and GPX increased in two groups that underwent surgery compared to the control group on day 3, and this increase was 1/5 times lower in the ovariohysterectomy-melatonin group. The amount of CAT in the group that only underwent surgery decreased significantly on day 3, while this amount remained almost constant in the three other groups. In a comparison of two sterilized groups for all the factors under investigation, it can be concluded that melatonin has significantly prevented reaching the oxidative peak observed in the group that only underwent surgery, and has succeeded in controlling post-ovariohysterectomy oxidative stress.

Key words:

Melatonin, Oxidative stress, Ovariohysterectomy, Antioxidant, Cat