Effect of melatonin implants on the morphological picture of selected internal organs, and hematological and biochemical indices in minks

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Abstract

This study was aimed at monitoring the effect of melatonin implants on selected hematological and biochemical indices as well as on morphology changes of lungs, liver, spleen, kidneys and brain in minks. Experiments were carried out on 300 minks aged 2 years, bred under conditions of a large-herd farm and fed identical feedstuff. Melatonin implants were inserted subcutaneously to the minks in the form of granules containing 6 mg of melatonin. The control group consisted of minks from the basic herd. A better appetite and higher body weights characterized the experimental minks. Skins obtained were larger, thinner and covered with springy hair with a good sheen, yet were stragglier than in the control group. The hematological indices analyzed did not differ between the groups and were within referential values. Biochemical indices of liver and kidneys profiles were better in the experimental group. In the experimental minks, histopathological examinations demonstrated lesser intensity of disorders in brain and liver circulation, lesser intensity of degenerative lesions in liver tissues and kidneys as well as smaller infiltration of lymphocytic and plasmatic cells in lungs and liver.

Key words: melatonin, hematological indices, AST, ALT, histopathology of internal organs, minks

Introduction

In mammals, the main organ secreting melatonin is the pineal body (corpus pineale), however its small doses may additionally be synthesized in the retina, lens, gastrointestinal tract, skin and bone marrow (Steful et al. 2001, Prost 2001, Lewczuk 2002, Kowalewska et al. 2004).

Lerner et al. (1958, 1959) determined the chemical structure of melatonin and named it for its lightening effect on melanophores of amphibian skin, as well as inhibiting metabolism in the human body and somnolence. Further investigations into the role of melatonin in humans were linked with the existence of the so-called “biological clock” and demonstrated a greater secretion of melatonin at night, i.e. in the