

**THE COMPARATIVE STUDY
OF ANTIOXIDANTS` NEUROPROTECTIVE PROPERTIES
UNDER THE CONDITION OF MEBENDAZOLE-INDUCED NEUROTOXICITY**

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Introduction. Nowadays, helminthic invasions are some of the most spread diseases among humanity. According to some authors, about one billion patients of the world's population are infected by helminths. They are mostly diagnosed in children and adolescents. In particular, the extensiveness of helminthic invasion among this category of population in some countries could reach to 66.7%. The antihelminthic medicines from the benzimidazoles` group, such as mebendazole, are mostly used for invasions treatment. Mebendazole has a high frequency of clinical usage in cases of parasitic invasion with helminthic etiology because of its broad-spectrum activity. In meantime, this drug is considered to have a range of side effects such as hepatotoxicity, dyspepsia and neurotoxicity that should be especially underlined. The clinical manifestations of the last one are represented by the increasing of anxiety, depression or mental disorders.

Aim. The experiment was conducted with a goal to explore the probability to reduce mebendazole-induced neuropathy by its combination with drugs that have antioxidant properties: vitamins-antioxidants and grist *Silybum marianum* with lycopene.

Materials and methods. 24 outbred male rats were previously divided into 4 groups, depending on the drugs that were administrated: group 1 – intact control; mebendazole (310 mg/kg) was administrated to animals from group 2 during 5 days; animals from the 3rd group got mebendazole accompanied by vitamins-antioxidants; the combination of analogical anthelmintic with grist *Silybum marianum* and lycopene was given to animals from group 4. The method rotating rod was used at the end of the experimental period with the aim of assessing the effectiveness of combined administration. The disorders in movement coordination, being indicators of potential neurotoxicity, were the objects of test analysis in which the rats' time standing on the spinning road was considered to be the criterion of evaluation.

Results and discussion. The average time standing on the road of intact animals was 167.5 sec. while analogical result of animals with control pathology showed 51.0 sec. The difference between this two groups counts 116.5 sec. and is reliable ($p < 0,001$). The period when the rats from the group 2 were holding up the spinning road in average lasted 119.2 sec. This result was significant higher by 68.2 sec. compared to mebendazole group and it also has proved reliability ($p < 0,05$). The time of retention on the tests equipment of animals from 3rd experimental group was 105.7 sec., that simultaneously was longer by 54.667 sec. than the result of control pathology group (the difference was significant, $p < 0,05$). In the same time, there was no difference between group 3 (119.167 sec.) and 4 (105.667 sec.) results ($p > 0,05$).

Conclusions. The comparative analysis of results between intact group and control pathology showed a significant mebendazole-induced neurotoxicity which was reliably proved according to the animals` time standing on the spinning road.

Simultaneous usage of mebendazole with both vitamins-antioxidants and grist *Silybum marianum* with lycopene highly prolonged the time standing on the rotating rod. The differences between these results and data from control pathology group had significant reliability. This fact confirms the ability of chosen drugs to decrease the mebendazole-provoked neurotoxicity. The difference in results between group 3 (mebendazole + vitamins-antioxidants) and group 4 (mebendazole + grist *Silybum marianum* with lycopene) is not significant; therefore drugs have shown the equivalence of neuroprotective effect.