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Albendazole Bioavailability Change in Combination with β-Cyclodextrin

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Aim of the study: Search for new, low-emission and highly bioavailable forms of drugs to become a pressing issue of modern veterinary and human medicine. This will reduce the dose, increase the effectiveness of pharmacotherapy of diseases, and improve the economic viability of the use of veterinary drugs. One way of solving the problem could be the use of a long-known and used under the number E459 in cosmetics compound that belongs to the class of cyclodextrins (CDs).

Material and Methods: Experiment was performed on 50 mice from the lines C57BL / 6 weighing 20-22 grams. Animals were divided into five groups 10 animals each. 1st – control group, received basic food and water ad libitum; 2nd - received with food albendavet (10% albendazole powder) in a dose of 5000 mg / kg of active ingredient; 3rd - received with food albendavet a dose of 12,000 mg / kg of active ingredient; 4th - received with food albendazole cyclodextrin complex (molar ratio 1: 2) at a dose of 5000 mg / kg of active ingredient; 5th - received with food cyclodextrin albendazole complex at a dose of 12,000 mg / kg of active ingredient.

Results: The study showed that the dose of albendazole 12000 mg / kg did not cause mice death (survived 10 of 10 (mortality 0%), and a complex of the drug with the cyclodextrin resulted in the death of 3 mice out of 10 (survived 7 out of 10, mortality 30%). Number of the survived mice after receiving toxic dose of albendazole - 12000 mg / kg is 10/10 (0 %) and its complex with cyclodextrin 10/7 (30%) (Total number of mice / alive (mortality rate). The increase in toxicity of the specimen shows its greater bioavailability. A specimen of albendazole poorly penetrates the membrane (5%) and considers a moderately toxic drug [1, 2]. After mixing it with cyclodextrin the resulting complex considerably easier penetrates the cell membrane and provides a more pronounced toxic effect.

Keywords: albendazole, β-cyclodextrin, mice, bioavailability