UDC 579.222:546.23

WESTERN BLOT ANALYSIS OF CELLULAR PRION CONTENT IN THE ORGANS OF RATS AFTER USING ANTISENSE THERAPY

N. U. Susol, PhD student, *V. V. Vlizlo*, PhD in Vet. Sci., Prof.
ua.nataliia@gmail.com

Institute of animal biology NAAS, Lviv, Ukraine

Prion infections are caused by a particular pathological form of prion protein which is present in all mammals. Today, there are no effective methods and means for treating and preventing prion infections. Despite the fact that the pathogenesis of prion infections is associated with the synthesis of PrP^C (cellular prion), there are assumptions that removing this protein from the body may prevent their development.

For PrP^C gene expression suppressing in studies oligonucleotide sequence 5'-ATGCTTGAG-GTTGGTT-3' were used, which are capable of binding to the central portion of the open reading frame mRNA of the cell prions. Antisense oligonucleotides (asODN) were synthesized by AlphaDNA (Canada). As carriers newly asODN synthesized polymers were used based on dimetilaminoetilmetakrilat (DMAEM), namely, PEG-DMAEM-MP-27 (MP-27), PEG- DMAEM-MP-2 (MP-2), PEG- DMAEM-MP-3 (MP-3).

Based on the results of *Western blot* analysis, it was found that the content of PrP^C decreased by 46 % in the intestines after application of the complexes with the MP-2 carrier 2 days later and 47 % 7 days after the administration ($P<0.05$). However, after the injection of asODN with MP-3, the decrease in total cellular prions was not so rapid (13 % and 26 %). But it was essential to reduce the content of PrP^C in the intestine for the introduction of complexes of asODN with MP-27 polymers.

The content of the cellular prion in the spleen was reduced by 32 % two days after the application of the asODN complexes with the MP-2 carrier. However, after 7 days the effectiveness of these complexes on the content of PrP^C fell and fluctuated within the limits of the control group. With the introduction of asODN with polymer carrier MP-3, it was noted that the total PrP^C content in the spleen decreased by 40 % after 2 days and by 48 % after 7 days. Analyzing the PrP^C content diagram after injections of the asODN complexes with the MP-27 carriers, a decrease in the cellular prion content (by 9 % after 2 days and 32 % after 7 days) was also noted.

Analysis of the results after the administration of the asODN complexes with the carriers MP-2 and MP-3 revealed that these polymers did not cause a decrease in the total content of PrP^C in rat brain tissues.

All newly synthesized polyDMAEM are able to bind and transport oligonucleotides. The introduction of complexes of asODN with polyDMAEM into the body of rats results in a decrease of the prion content in the tissues of the spleen and small intestine. The most effective effect on the decrease in the content of the cellular prion was demonstrated by the complex of asODN with the MP27 polymer.