I. Summary

Neonatal calf diarrhoea is one of the most important diseases in calves, having a major impact on the economic viability of cattle herds worldwide. Calf diarrhoea is caused by various infectious agents, including viruses, bacteria and parasites, either alone or in combination.

Enteropathogenic *E. coli* strains are considered one of the most important agents causing calf diarrhoea, including Shiga-toxin producing strains. The pathogenicity of STEC is associated with a number of virulence factors, including *Stx1, Stx2*, intimin and enterohaemolysin. Cattle are the most important reservoir of STEC, which may be transmitted to humans through the ingestion of foods or water contaminated with animal faeces, or through direct contact with the infected animals or their environment. Treatment of diarrhoeic calves with antibiotics is not recommended due to increased levels of antibiotic resistance among pathogens and the introduction of legislation in EU countries restricting the use of antibiotics for animals. The implementation of legislation limiting the use of antibiotics in animal husbandry as well as the growing phenomenon of drug resistance among pathogens has led to the development of alternative methods of eliminating pathogens. The most frequently used alternative treatments to antibiotics in humans and animals include bacteriophage therapies.

The aim of the study was to develop a bacteriophage preparation with probiotic bacteria in the form of suppositories for calves with diarrhoea. The next step was to evaluate the efficacy of the treatment in preventing diarrhoea in calves by assessing specific and non-specific humoral immune mechanisms and the inflammatory process in the calves, as well as their prophylactic effect in terms of resistance to diarrhoea.

The *in vitro* part of the study included preparation of suppositories containing three phages (φ 26, φ 29 and φ 27) specific to Shiga-toxin-producing *E. coli* in