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Pharmacokinetic and tolerance of intraarticular cefovecin sodium in horses

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Introduction
Synovial infections are pathological processes with serious consequences for the animal’s health and can cause permanent lameness. The most effective treatment includes removal of the causative microorganisms and devitalized tissue by flushing the joint and debridement of the affected tissue, together with adequate antibiotherapy administered either locally, regionally or systemically. The aim of this research project is to study the kinetics and possible side effects of intrasynovial treatment of horses with sodium cefovecin, a third generation cephalosporin.

Material and methods
A single dose (240 mg) of sodium cefovecin (Convenia®) was administered into the radiocarpal joint of 5 healthy adult horses. Drug concentrations in plasma and synovial fluid were studied. The evaluation of local side effects was based on the modification of different joint pathophysiological parameters (pH, cellular, and protein concentration in synovial fluid).

Results
After intrasynovial administration cefovecin remained above the minimal inhibitory concentration for Staphylococcus aureus for 28.8 ± 2.58 hours in the radiocarpal joint, and for 16 ± 2.86 hours in the plasma. The total concentration of antibiotic was approximately 500 times (range: 477 to 554) higher within the joint compared to plasma. There was a significant increase in the cellular (p<0.01) and protein (p<0.01) concentrations 30 minutes of placing the intrasynovial catheter, and a significant difference between treatment and control in the cellular concentration at the same time points (p<0.05). Otherwise no clinically significant differences were noticed.

Conclusion
On the basis of pharmacokinetic behavior (concentration over MIC levels for at least 24 hours) and good local tolerance, intra-articular administration of cefovecin in horses may form part of a suitable treatment regime in the management of septic arthritis.