

# Vancomycine is superior to Plectasine against *Staphylococcus aureus* periprosthetic osteomyelitis in rats

Niels H. S e<sup>1</sup>, Asger L. Jensen<sup>2</sup>, Britt Siesing-Mejer<sup>3</sup>, Steen S. Poulsen<sup>4</sup>, Janne Koch<sup>5</sup>, Helle K. Johansen<sup>6</sup>

<sup>1</sup> Handsection, Department of Orthopaedic surgery (Herlev & Gentofte University Hospital), <sup>2</sup> Department of Veterinary Clinical Sciences (Frederiksberg), <sup>3</sup> Department of Orthopaedic surgery, handsection, (Hiller d University hospital), <sup>4</sup> Endocrinology and Metabolism, The Panum Institute (Copenhagen University) <sup>5</sup> Leo Pharmaceuticals (Ballerup), <sup>6</sup> Department of microbiology (Copenhagen University) Denmark

**Aim:** to investigate the ability of vancomycine and plectasine to eradicate *S. aureus*, in a knee prosthesis model of osteomyelitis in rats



Vancomycine



Plectasine 20 mg



Plectasine 40 mg

**Conclusion:** Plectasine treatment against *S. aureus* osteomyelitis reduced the infection. However, Plectasine released histamine strongly in the first day of treatment and some of the rats died, especially in the 40 mg group. In contrast, Vancomycine reduced the infection significantly in almost all of the parameters, with no increased histamine activity

**Methods:** Thirty Sprague-Dawley rats had prosthesis inserted and divided into three groups (N=10) 10N3 bacteria *S. Aureus* MN8, ica+ were inserted into the femoral and tibial bone marrow of the knee before insertion of the prosthesis. One vancomycin group, Including 2 controls, and two Plectasine groups one with 20 mg/kg and one group with 40 mg/kg With 2 controls in each group. Vancomycin and Plectasine were given intraperitonally before the operation. Control rats were given NaCl i.p. instead of antibiotics. After two weeks, the rats were sacrificed, and all specimens were analysed clinically, radiographically, biochemically, microbiologically and histologically.



**Results:** In the Vancomycine group, all rats survived and it reduced the infection significantly in almost all of the infections parameters. Plectasine treatment reduced the infection in both groups, but the effect was especially seen in the 40 mg group, which was near to the Vancomycine group except for the histology, but only half of the rats were left. 1 rat from the 20 mg Plectasine group and 4 from the 40 mg Plectasine group, died of anaphylactic shock (histamine release).