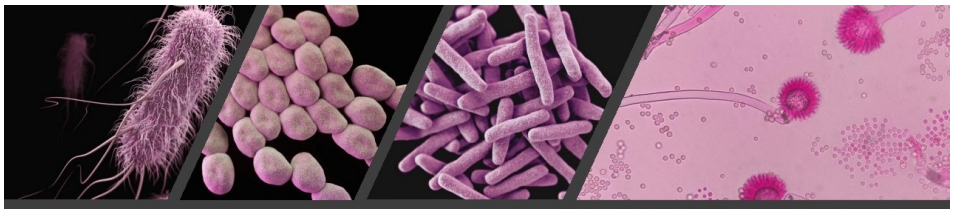

Abstract ID : **23**

A novel macrolide-lincosamide resistance gene in Actinomyces bowdenii isolated from an abscess in a dog

Content

Acquired resistance in actinomycetes infecting companion animals is rare. Usually β-lactams, tetracyclines and clindamycin are considered for treatment. There are however studies about human isolates reporting acquired resistance, especially against clindamycin.
Over the last five years three out of 98 actinomycetes isolated from dogs and cats in our diagnostic laboratory were resistant to clindamycin. One *Actinomyces bowdenii* strain (21MD1404) isolated from a dog abscess was subjected to whole genome sequencing to determine the genetic basis of resistance. Analysis with ResFinder-4.7.2 revealed no known resistance genes. However, a genome alignment with clindamycin susceptible strain 07KM1036 using mauve 1.1.3 led to the discovery of a potential rRNA-methylase gene. The gene was related to known *erm* genes which usually confer macrolide, lincosamide and streptogramin B resistance. The most closely related showed 40% amino acid identity, clearly below the threshold of 79% for designating new genes. To test the functionality of the new gene, plasmid pacti_erm3 was constructed consisting of partial vector pJRD215 and the resistance gene including the promoter region. The plasmid was transferred into the susceptible strain 07KM1036 where it led to a clindamycin MIC increase from 0.12 mg/L to 32 mg/L and an erythromycin MIC increase from 0.03 mg/L to 1 mg/L. These results indicate that the discovered gene is indeed responsible for the clindamycin resistance of strain 21MD1404.

Keywords

Actinomyces bowdenii, erm, clindamycin, dog

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