

**TITLE:** ANTIMICROBIAL ACTIVITY OF USNIC ACID ON *Staphylococcus* spp. OF CANINE PYODERMATITIS

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**ABSTRACT:**

Bacteria of the genus *Staphylococcus* are among the pathogens that most cause canine pyodermitis. However, with bacterial resistency, the therapeutic conduction before this group of diseases has become inefficient, mainly related to the formation of microbial biofilm. In this context, antimicrobial alternatives have been sought for the treatment of infectious diseases. The usnic acid is a secondary metabolite derived from lichen, which have many biological properties, including an antimicrobial function. In addition, a nanoencapsulation is a technique that has been widely used in order to maximize the effects of therapeutic resources, including encapsulating hydrophobic molecules such as usnic acid. Therefore, the present study evaluated an antimicrobial activity of the usnic acid and its nanoparticle against the isolates of *Staphylococcus* spp. from canine pyodermitis and the capacity those substances to interfere in the biofilm formation. For this, it was performed phenotypic sensitivity tests with eight antimicrobials of different classes and determined the susceptibility profile of the purified and nanoencapsulated usnic acid against ten isolates by the broth microdilution method. Finally, it was verified if the compounds presented biofilm action against tested isolates of *Staphylococcus* spp. In the phenotypic test, only 25% of isolates presented sensibility of ciprofloxacin, oxacillin and cephalixin. Both purified usnic acid and nanoencapsulated presented inhibitory and antibacterial effect in low concentrations. However, the nanocapsule had better activity when compared to the purified one, with a minimum bacterial concentrate average of 7.41 µg / mL. Both compounds demonstrated the anti-biofilm action, even in the already consolidated interference. Thus, the usnic acid nanoparticle has produced an effective in vitro antibacterial effect, including in the formation state of the bacterial biofilm. Therefore, this substance may be a potential alternative to control pyodermitis caused by *Staphylococcus* spp. resistant to conventional antibiotics.

**Keywords:** biofilm, lichen, nanocapsules, resistance.

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