

**TITLE:** *In vitro* SUSCEPTIBILITY OF *Rhodococcus equi* ISOLATED FROM FECES AND NASAL SWAB OF HEALTHY FOALS IN RIO GRANDE DO SUL, BRAZIL, TO AZITHROMYCIN, ERYTHROMYCIN AND RIFAMPICIN

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**ABSTRACT:**

*Rhodococcus equi* is a gram-positive facultative intracellular pathogen, etiologic agent of equine rhodococcosis in foals under six months of age. The recommended therapy against *R. equi* pneumonia is the combination of macrolide with rifampicin because of their ability to penetrate in lipophilic environment. The aim of this study was to determine the antimicrobial susceptibility of *R. equi* isolated from feces (n=18) and nasal swabs (n=5) from 3 to 16 weeks aged foals with no clinical signs of rhodococcosis, between September 2015 and March 2016, to the main drugs used in rhodococcosis therapy. The collected foals did not received antimicrobial treatment previously and were from three farms endemic for rhodococcosis, in Rio Grande do Sul – Brazil. The susceptibility of twenty-three *R. equi* isolates (21 positive to *vapA* gene and two negative) to azithromycin (AZM), erythromycin (ERY), and rifampicin (RIF) was evaluated by the disc diffusion method. All isolates showed sensitivity to AZM and ERY and 87% to RIF. All nasal isolates showed sensitivity to RIF, conversely 16.66% (3/18) of *R. equi* from feces samples were resistant or intermediate to RIF. We did not notice relationship between the presence or absence of *vapA* gene and the antimicrobial susceptibility profile. The *R. equi* resistance to RIF has increased over the years and has been related to mutations in *rpoB* gene. RIF is the only one antibiotic used in combination with macrolides to treat *R. equi* foal pneumonia and its use aims to minimize the occurrence of resistance in this therapy. Based on the preliminary results obtained here, the authors intend to analyze *R. equi* from animals with clinical signs and environmental samples from different farms. In view of the resistance observed here, we plan to investigate mechanisms behind this phenomenon, as mutations of genes associated to RIF resistance. We would like to highlight the importance of microbiological susceptibility testing before starting treatment to avoid failures in the therapy and emergence and selection of antimicrobial resistance in *R. equi*.

**Keywords:** Rhodococcosis, agar disc diffusion, antibacterial resistance, macrolide, rifampicin

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