

TITLE: BACTERIAL COMMUNITIES IN PASTURES FROM BOCA DO ACRE, AMAZONAS, POSSIBLY RELATED TO EPIZOOTIC BOVINE PERIODONTITIS

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ABSTRACT:

Bovine periodontitis, also known as “cara inchada” (i.e. swollen face), is a disease that affects cattle in Brazil since the 1970's. “Cara inchada” (CIb) is characterized as a progressive bacterial infection that compromises the periodontal tissues, causing a lateral face swelling. The disease makes feeding difficult for calves, sometimes leading to weight loss or death, causing great economic loss. Previous studies have shown that the transference of sick animals to disease-free areas with natural pasture reverted CIb and the animals became healed. Therefore, this suggested that the key factor causing this illness may be presented in recently cultivated pastures. Moreover, deforestation to establish new pastures results in a change of soil microbiome, especially in the phylum *Actinobacteria*. It was raised the hypothesis that the pathogenic microorganism's proliferation in the animal's mouth could be related to a subinhibitory production of antimicrobials by actinobacteria in soil. On account of the economic loss caused by CIb and to better comprehend the relation between the soil microbiome and the disease, this project aims to: i) compare the community structure of total bacteria and *Actinobacteria* in areas of high (HI) and low (LI) incidence of the disease, using denaturing gradient gel electrophoresis (DGGE); ii) establish if there is a difference in the abundance of *Actinobacteria* between HI and LI by applying real-time polymerase chain reaction (Real-Time PCR). Two farms, one with HI and another with LI of the disease, were identified in Boca do Acre (AM). Fifteen rhizosphere samples were taken in each of these farms. Ten of these samples were taken in recently formed pastures and the remaining 5 samples were taken in old pastures, totalizing 30 samples. DNA extraction from rhizosphere soil was followed by PCR to amplify the *rrs* gene of the total bacteria community and by a semi-nested PCR for *Actinobacteria*. The multivariate analysis and biostatistics based on the DGGE matrix revealed a tendency of separation between new and old pasture samples, indicating that bacterial community structure was influenced by the age of the pastures. Besides, the population of *Actinobacteria* was distributed according to the incidence rate of the disease, splitting the samples in two groups: HI and LI. According to the hypothesis here suggested, we hope it becomes possible to correlate the abundance of actinobacteria in soil to the development or not of CIb.

Keywords: bovine periodontitis, actinobacteria, denaturing gradient gel electrophoresis, real-time PCR

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