TITLE: ANTIBIOTIC ACTIVITY OF ACTINOMYCETES ASSOCIATED WITH THE INTESTINAL MICROBIOTA OF BEETLES (COLEOPTERA)

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ABSTRACT:

A growing interest in intestinal microorganisms of beetles (Coleoptera) is observed. Symbiotic microorganisms as a source of antibiotics have been relatively little investigated, being promising sources. In this study, adult beetles were collected in their natural habitats, kept in sterile Petri dishes for 3 days, without feeding, before euthanasia and dissection. The intestines were removed aseptically, pinched into 2mL sterile microtubes containing 100 µl of 0.9% saline, and the macerated (neat) was spread on culture media that favored the growth of bacteria (ZSSE media: soluble starch , potassium nitrate, soil extract and agar, and Jaussem media: glucose, casein, potassium phosphate, magnesium sulphate, iron chloride and agar). The detection of antibiotic activity was carried out by means of a plug test of the isolates from the large intestine of beetles against pathogenic target bacteria (*Escherichia coli, Salmonella sp. and Staphylococcus aureus)* with evaluation of the inhibition halos. Thirty-five beetles of 11 species *(Veturius magdalenae, Veturius sinuosus, Passalus latifrons, Popilius marginatus, Veturius cephalotes, Spasalus aquinoi, Vetusus parasensis, Passalus coniferus, Passalus variiphyllus, Passalus abortivus, Passalus amazonicus)* were identified in the Coleoptera entomology laboratory in the National Institute of Research of the Amazon - INPA. Considering its macro and micromorphologies, 111 isolates classified as actinomycete bacteria were purified. After testing the target bacteria, 52 (46.84%) of the bacterial strains isolated showed activity against at least one target bacterium, and 41 (36.93%) were active against all the bacteria of interest. These results characterize the potential of the intestinal bacteria of beetles, indicating that they act as a rich and as yet unexplored source of new bioactive molecules.

Keywords: Antibacterial; actinomycete bactéria; beetles (Coleoptera).

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