Title: ISOLATION OF MICROORGANISMS FROM THE MICROBIOTA OF THE ANTARCTIC PENGUINS PYGOSCELIS PAPUA AND P. ANTARCTICUS

Autors Klemberg, V.S[1], Petry, M.V[2], Cardoso,M.R.I[1], Horn.F[1]

Institution [1] UFRGS- Universidade Federal do Rio Grande do Sul (Avenida Bento Gonçalves, 1500, Porto Alegre-RS), Unisinos[2] (Universidade do Vale dos Sinos, Avenida Unisinos, 950- Cristo Rei, São Leopoldo-RS)

Abstract:

Antarctic seabird populations have been much studied as bioindicators of the nature variability in the Southern Ocean marine ecosystems. Among the Antarctic seabirds, the most abundant are seven penguin species, which includes the three species of the genus Pygoscelis. Pygoscelis adeliae, P. antarcticus and P. papua have colonies in the South Shetland Islands, and although their populations have been disturbed by human acitivities, such as scientific research and tourism, they remain among the wild birds with least contact with humans. Thus, their microbiota may serve as indicators of antimicrobial resistance in the environment. The goal of our project is to evaluate the antimicrobial resistance present in the microbiota of the forementioned penguin species. For that, we have collected samples of apparently fresh feces from P. papua (n = 12) and from P. antarcticus (n = 46) in their respective colonies located in the Elephant Island in December 2014. Samples were stored in natura at -20ºC during transport and then at -80ºC until use. We could observe mainly gram-positive bacillus but also a smaller proportion of gram-negative bacillus in one sample of P. papua feces cultivated in BHI broth at 37ºC overnight, and this culture yielded lactose-fermenting colonies in MacConkey agar. Surprinsingly, however, we have been unable to isolate gram-negative microorganisms from P. antarcticus feces. We have so far analyzed 10 samples, and rare gram-negative bacillus could be observed in BHI broth O/N cultures of P. antarcticus feces. Likewise, we could observe only gram-positive cocci and gram-positive bacillus in feces in natura. We have also cultivated P. antarcticus feces in BHI broth supplemented with crystal violet (0.001 mg/ml) in order to inhibit growth of gram-positive microorganisms. Again, this culture yielded no colonies in MacConkey agar, although gram-positive cocci grew in LB agar. Next summer, we plan to collect samples from P. antarcticus feces from colonies not only in Elephant Island but also in Penguin and Livingston Islands. Analyses of these samples will reveal if the virtual lack of gram-negative bacteria is a characteristic of P. antarcticus microbiota or if it was only a fluctuation. Thus, P. papua microbiota may be used to screen for gram-positive and gram-negative resistance genes, but this possibility remains to be confirmed for P. antarcticus.

Keywords: Penguins, bacteria, microbiota, P.papua, P.antarticus.