Leishmania (*Viannia*) *braziliensis* interactions with *Serratia marcescens*: effects of prodigiosin and D-mannose on bacterial lytic activity.

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Although several aspects of the sandfly-parasite interactions have been studied, little is known about the niches occupied by parasites and the role of vector gut microbiota during these interactions. Further research is required to investigate if colonized species of bacteria in the sandfly gut produce lytic compounds able to kill *Leishmania spp*. Evidence of the possible influence of gut microbiota on the parasite life cycle has been reported in sandflies. In this work, the lytic activity of two variants of *Serratia marcescens* against promastigotes of *Leishmania braziliensis* was studied. *In vitro* assays showed that *S. marcescens* variant SM365 lyses *L. braziliensis* promastigotes, while the variant DB11 did not ($p<0.001$). Scanning Electron Microscopy (SEM) revealed that *S. marcescens* SM365 adheres to all cellular body and flagellum of the parasite. Several filamentous structures were formed and identified as biofilms. After 120 minutes incubation, they connect the protozoan to the developing bacterial clusters. SEM also demonstrated that bacteria, adhered onto *L. braziliensis* promastigote surface, formed small filamentous structures which apparently penetrate into the parasite membrane. D-mannose protects *L. braziliensis* against the *S. marcescens* SM365 lytic effect in a dose dependent manner ($p<0.001$). SM365 variant pre cultivated at 37^{o}C did not synthesize prodigiosin although the adherence and lysis of *L. braziliensis* were similar ($p>0.05$) to the effect observed with bacteria cultivated at 28^{o}C, which produce high concentrations of prodigiosin. Thus, we suggest that prodigiosin is not involved in the lysis of promastigotes and that adherence promoted by bacterial mannose-sensitive fimbriae is the determinant factor in the lysis of *L. braziliensis* by *S. marcescens* SM365.

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