ABSTRACT:
Arcobacter is a pathogen involved in foodborne diseases which is frequently isolated from foods of animal origin. The objective of the present study was to evaluate the in vitro and in vivo interaction of Arcobacter butzleri and Arcobacter cryarophilus of avian origin. Four virulent strains of Arcobacter spp. obtained from poultry meat sold in the city of São Paulo were used in this study. In vitro analysis demonstrated that the strains presented low ability to form biofilms. In HeLa cell adhesion tests, strains showed low to moderate intensity adhesion, and only one strain did not show ability to adhere. All strains tested were cytotoxic to VERO cells, causing elongation and rounding of the cytoplasm and vacuolization. In vivo tests included inoculation of SPF birds and the ligated rabbit intestinal loop model. The rabbit model showed accumulation of liquid and intense hemorrhage 12 hours after inoculation, with diffuse edema in the lamina propria and submucosa, ectasia of lymph vessels, and mixed inflammatory infiltrate. The intestinal lumen showed red cells associated with cell debris. Thirty birds (divided into 5 groups) were challenged. Animals were inoculated by gavage with 0.1 mL of culture 1.0 x 10^7 CFU/mL A. butzleri, A. cryarophilus. Macroscopic changes observed upon post-mortem examination showed different lesion patterns, including hyperemia of the small intestines, gas formation in intestinal loops, and pale organs. Live birds showed only slight diarrhea without other apparent clinical manifestations. Histology analysis showed intense inflammation of small intestines with reduced villus height. Immunological analysis was based on genes that encode IFN-alpha, IL-1, IL-10, and β-actin measured by real time PCR in cecal tonsils and spleen of the birds. Challenged animals did not show inflammatory reaction in spleen cells. Tonsils showed increased expression of the proinflammatory cytokines IL-1 and INF alpha. Similar results for the expression of cytokines IFN-γ, TNF, IL-6, and MCP-1 were observed in studies involving gnotobiotic rats challenged with E. coli, Campylobacter jejuni, and Arcobacter butzleri. Data obtained in the present study suggest that Arcobacter spp. is more than a commensal in vertebrate hosts, indicating the pathogenic potential and risk of foodborne transmission of these bacteria.

Keywords: diarrhea, diseases of poultry, pathogenic bacteria, Arcobacter, foodborne transmission.

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