

**Title:** Molecular characterization of *Escherichia coli* strains from Brazilian patients with rectal cancer.

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### **Abstract**

In Brazil, colorectal carcinoma is considered the intestinal disease most commonly observed in the population. A possible association between some microorganisms and the development of this cancer kind has been shown. In this study, the presence of pathogenic and non pathogenic *Escherichia coli* strains isolated from fecal microbiota of patients with or without rectal cancer (RC) was evaluated. In addition, the genetic diversity and presence of phylogroups were also determined. Feces were plated on agar MacConkey and colonies were identified as *E. coli*. The different pathotypes and the virulence genes in extraintestinal (ExPEC) strains were examined by PCR. The bacterial genetic diversity and phylogroups were determined by ERIC-PCR and multiplex PCR, respectively. 120 strains from RC, 59 (49.2%) diarrheogenic *E. coli* (DEC), 53 (44.1%) ExPEC, and 8 (6.7%) commensal were identified. 72 strains from healthy, 31 (43%) DEC, 37 (51.4%) ExPEC, and 4 (5.6%) commensal were identified. Of the 59 and 31 DEC strains, respectively, from RC and healthy, 22 (37.3%) and 15 (48.4%) were identified as aEPEC; 26 (44.1%) and 4 (12.9%) as tEAEC; 10 (16.9%) and 8 (25.8%) as aEAEC; and 1 (1.7%) and 4 (5.6%) as STEC. Statistically significant values between tEAEC and STEC ( $P = 0.003$  and  $P = 0.027$ , respectively) were observed. ExPEC strains were identified for harboring 2 or more genes from the 9 virulence genes evaluated. None of them harbored simultaneously the nine evaluated genes. ExPEC strains from RC and healthy harbored *iutA* (aerobactin), *kpsMTII* (capsule) or *sfa/foc* (S pili) genes. All *E. coli* strains showed a high genetic diversity by ERIC-PCR. Phylogroup B2 was the most predominant (106 strains, 55.2%). Phylogroups D and E were absent in strains from healthy. Presence of DEC (aEPEC, tEAEC) and ExPEC strains in mono or co-infection suggests depth studies to determine their role in the pathogenesis of the rectal carcinoma.

**Key-words:** *Escherichia coli* pathotypes, ExPEC, rectal cancer, ERIC-PCR, phylogroup typing.