

Naveen Kumar Vishvakarma  
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# Colon Cancer Diagnosis and Therapy

Volume 2

 Springer

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## Chapter 5

# Role of Bacteria in the Development of Cancer

Archana Mishra and Vibhay Nath Tripathi

**Abstract** Cancer is a cellular state where normal growth and survival of the cells are altered by a series of genetic changes. These changes can be induced by different factors, internal as well as external. Microbial infections are one of the major external factors and estimated to be responsible for 20% of the human cancers. These are mainly caused by viruses, but other microbes like bacteria, molds, or helminths are also reported to play an important role. Colorectal cancers (CRCs) are the third most common type of cancers in terms of number of cases. Almost 10% of all new cancer cases belong to this category. The intestine is a home for a large number of bacteria, which forms one of the most intimate relationships with humans. While mostly this relationship is considered beneficial, yet it is naïve to think that it is always that way. Recent studies showed involvement of some intestinal microbiota in cancer formations in the colon. Important mechanisms of bacterial induction of cancers are modulation and evasion of immune response, induction of chronic inflammation, activation of specific signaling pathways, and production of carcinogenic toxins or effector proteins. This present review tries to summarize the available knowledge about the relationship between cancer induction and bacteria, with special emphasis on colon cancer.

**Keywords** Colorectal cancer · Microbiota · Inflammation · Signaling pathways

### Abbreviations

AIEC Adherent-invasive *Escherichia coli*  
BFT *Bacteroides fragilis* toxin  
CDT Cytolethal distending toxin

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