

Association of intestinal parasitic infection with colorectal cancer:  
Special focus on *Blastocystis* sp.

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Globally, colorectal cancer (CRC) incidences and deaths are on the rising trend. In Malaysia, CRC is the second most common cancer and is considered a disease of national importance as its incidence rate is expected to surpass coronary and pulmonary associated diseases in the coming years. Scientific reports have evidenced that apart from genetic inheritance, infectious organisms including intestinal parasites do contribute to the pathophysiology of CRC. Generally, infection may be associated with cancer via two main mechanisms: inflammation and immunosuppression. Two common intestinal parasites that have been directly implicated with CRC include *Shistosoma japonicum* and *Cryptosporidium* sp.. Meanwhile, there are some parasites that have been associated with other causative diseases of CRC such as Crohn's disease and Irritable Bowel syndrome. Such parasites include *Dientamoeba fragilis*, *Giardia* spp., *Trichuris trichiura*, and *Blastocystis* sp.. *Blastocystis* sp., a protozoan parasite, is one of the most common intestinal parasites found in humans. A cohort study has evidenced the presence of this parasite in patients with colorectal carcinoma. Following this we have published numerous data suggesting the parasite's ability to exacerbate colorectal cancer cell growth in vitro by elevating the release of pro-inflammatory cytokines, gene transcription factors and apoptotic genes. We then continued to investigate the role of *Blastocystis* sp. in pathways that are closely associated with CRC namely Wnt pathway. An alteration in the gene regulating this pathway such as adenomatous polyposis coli (APC) gene is a crucial event in the progression of CRC. The observations obtained thus far have shed light elucidating the possible mechanisms employed by *Blastocystis* sp. in promoting colorectal cancer cell growth in vitro which will be discussed in more detail during the lecture.