

## How far away from using Aspirin to Treat Colon Cancer?

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**Abstract:** *The chemoprevention effect of Aspirin has been well recognized until now. Recently, two researches published in Cell (2015; 162: 1257–1270) and Journal of National Cancer Institute (2015; 107(1):345) even suggested the helpful effect of aspirin in the treatment of colon cancer. We summarized the key points of both studies here and initiated a topic: How far away from using aspirin to treat colon cancer?*

**Keywords:** *Colon Cancer; Aspirin; Immunotherapy; Chemotherapy; cyclooxygenase.*

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It has been recognized that aspirin is a promising agent for cancer chemoprevention by various epidemiological studies since 1988[1]. Especially, daily aspirin use has been believed to significantly decrease the rate of morbidity and mortality of colon cancer[2, 3]. Recently, two researches even suggested the helpful effect of aspirin in the treatment of colon cancer.

In one research published in Cell (2015;162: 1257–1270), Santiago and colleagues showed that aspirin use maybe useful for immune-based therapies in cancer patients also. They firstly found that prostaglandin E2 (PGE<sub>2</sub>) produced by cancer cells contributed to cancer cells evading anti-tumor immunity through shifting the inflammatory profile in various cancer models. PGE<sub>2</sub>, produced by cyclooxygenase (COX) in cancer cells, strongly inhibited the production of mediators with cancer-inhibitory effects, such as TNF and IL-12, while induced the production of mediators promoting cancer cell growth, such as IL-6 and CXCL1, by bone marrow derived mononuclear cells (BMMCs)[4]. Further they showed that COX inhibition by using aspirin synergized with anti-PD-1 monoclonal antibody based immune checkpoint blockade therapy, a great promising immune therapy aimed at unleashing the anti-cancer potential of tumor-specific T cells[5, 6], in various cancer models including colon cancer[4].

In another research published in Journal of National Cancer Institute (2015;107(1):345), Kimmie Ng and colleagues reported that aspirin may be effective in the adjuvant therapy of colon cancer. They performed a prospective analysis of aspirin use in stage III colon cancer patients enrolled in a clinic trail, which was originally designed to compare fluorouracil (FU) and leucovorin (LV) with FU, LV plus irinotecan for adjuvant treatment of stage III colon cancer (GALGB 89803)[7], they observed that consistent aspirin use during chemotherapy was associated with improved recurrence-free survival (83.1% vs 74.9% at five years), disease-free survival (78.4% vs 71.1% at five years), and overall survival (87.6% vs 80.9% at five years)[8]. Even this study was based on a self-administered questionnaire analysis, it provided another emerging evidence that colon cancer patients underwent chemotherapy would be benefit from aspirin use.

Taken together, aspirin may be helpful to treat colon cancer, thus we believe that it is time to test this hypothesis with randomized, multicenter and controlled clinic trail.

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