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Anti-cancer effects of blueberry polyphenols on colon cancer

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Colorectal cancer is a serious health problem particularly in more developed countries. The consumption of fruits and vegetables has been inversely associated with the risk of colon cancer. Berries have been proposed to have anti-cancer effects because of the diverse polyphenols such as anthocyanins, flavonols and flavanones they contain. In this study, we investigated the effect of blueberry extract and its metabolites after *in vitro* digestion and fermentation to mimic metabolism along a gastrointestinal tract (GIT), on colon cancer biomarkers. In this investigation, we used HT-29 for genotoxicity, cell viability, cell cycle assay and Caco-2 for the study of epithelial integrity as the models of colon cancer. Our results demonstrated that blueberry, digested blueberry extract (at 25 to 100 µg/ml), fermented blueberry (at 2 to 10%) and the major anthocyanidins, delphinidin and malvidin (at 2.5 to 10 µM) exerted significant anti-genotoxic effects in a dose dependent manner ($p < 0.05$). A growth inhibition of 20% in HT-29 was observed accompanied with a significant restriction of the G2/M phase of cell cycle after 48 hours. However, after the treatment epithelial integrity was unaffected. According to our data, we may imply that blueberry is a potential candidate for the protection of colon cancer in various pathways and its bioactivity still retains after the imitation of metabolism along GIT.

Biography

Kunjana Rotjanapun has completed her Master degree from Lund University, Sweden and worked as a Research Technician at Suranaree University of Technology, Thailand. At present, she is a PhD candidate at the University of Reading and her research is focused on effect of natural compounds in diets on the protection of cancer in *in vitro* model.

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