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DIETARY LUTEOLIN SUPPRESSES CHEMICAL INDUCED COLORECTAL CANCER PROLIFERATION IN HIGH FAT DIET FED MICE

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Colorectal cancer (CRC), which is one of the most commonly diagnosed cancers in developing and developed countries, is highly associated with obesity. The association is largely attributed to changes to western style diets in those countries containing high-fat and high-energy. Luteolin (LUT) is a known potent inhibitor of inflammation, obesity, and cancer. In this study, we investigated the effects of LUT on chemical-induced colon carcinogenesis in high fat diet (HFD)-fed obese mice. Five-week-old male C57BL/6 mice received a single intraperitoneal injection of azoxymethane (AOM) at a dose of 12.5 mg/kg body weight. Mice were then divided into four groups (n=10) that received one of the following diets for 11 weeks after the AOM injection: normal diet (ND); HFD; HFD with 0.0025% LUT (HFD LL); HFD with 0.005% LUT (HFD HL). One week after AOM injection, animals received 1~2% dextran sodium sulfate in their drinking water over three cycles consisting of five consecutive days each that were separated by 16 days. Body weight and tumor multiplicity increased significantly in the HFD group compared to the ND group. LUT supplementation to the HFD significantly reduced the ratio of colon tumors, but not body weight. Immunohistochemistry analysis showed that intestinal epithelial hyperplasia and proliferating cell nuclear antigen (PCNA) expression was decreased by LUT. Interestingly, the levels of plasma insulin-like growth factor 1 (IGF-1) and colonic IGF-1 receptor protein increased in response to HFD, but were suppressed by LUT supplementation. These results suggest that consumption of LUT may reduce the risk of obesity-associated CRC by suppression of colonocyte proliferation via IGF-1 signalling.

Biography

Jeong-eun Park is a doctoral student in the department of food Science and nutrition at Daegu Catholic University. Currently, she is investigating on the mechanism of bioactive components extracted from mulberry trees or traditional Korean medicinal plants for the prevention of metabolic diseases such as obesity, diabetes, and cancer.

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