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DIFFERENTIAL EFFECTS OF DIETARY PROTEIN (CASEIN, WHEY, SOY, WHITE MEAT, RED MEAT) ON DEXTRAN SODIUM SULFATE-INDUCED COLITIS IN MICE

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Inflammatory bowel disease is associated with increased risk of colorectal cancer (CRC). Especially, CRC is one of the cancers which have the highest correlation with meat or high protein intake. However, the effect and the mechanism of various dietary protein sources on the colitis development have not yet been elucidated. In this study, female Balb/c mice were divided into seven diet groups: 20% casein (20C; control), 20CD, 40% casein (40CD), 40% whey (40WD), 40% soy protein (40SD), 40% white meat (40WMD) and 40% red meat (40RMD). Mice were fed experimental diet for 4 weeks and the mice except 20C group were given 3% dextran sodium sulphate (DSS) in drinking water for 6 days on the 4th week of the experiment. Survival rate of mice in 20C, 20CD, and 40SD groups were 100%, whereas only 63% of mice in 40CD were survived at the end of experiment. Disease activity index was significantly increased in 40CD and 40WD compared to 20CD. TNF- α and IL-6 mRNA expression in colon was the highest in 40CD and the lowest in 40WMD among the 40% protein fed groups. Myeloperoxidase activity in colon was increased in 40CD compared to 20CD, but was decreased in 40WD and 40RMD compared to 40CD. Colonic iNOS protein expression was increased in 40SD and 40RMD, whereas it was decreased in 40WD and 40WMD compared to 40CD. COX-2 expression was the highest in 40CD and 40WMD and the lowest in 40SD and 40RMD among the 40% protein fed groups. Histopathological analysis of colon showed that the inflammatory phenotypes were the most prominent in 40CD, whereas the pathological features of 40WMD were comparable to those of 20C. Collectively, this suggests that casein and white meat exacerbates mitigates colitis the most, respectively, given at 40% of diet.

Biography

Eunyeong Ahn has completed her bachelor's (2013) and master degree (2015) in the department of food science and nutrition at Daegu Catholic University. She has published more than 5 papers in reputed journals. She focuses particularly on the association between protein consumption and colorectal cancer.

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