

Association of Dietary Sulfur Amino Acid Intake and Colorectal Adenoma Among Chicago Adults

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Colorectal cancer (CRC) is the third most commonly diagnosed cancer in the United States. Among all racial-ethnic groups in the U.S., Black Americans exhibit among the highest incidence and mortality rates for CRC. While previous studies have demonstrated a link between a sulfur microbial diet pattern and colorectal adenoma and CRC, the relationship between this diet pattern and adenomas as a factor associated with health inequities observed among Black Americans remains unexplored. Considering that Black Americans have higher rates of CRC and have been shown to have increased sulfidogenic bacteria, which thrive on dietary sulfur to produce cancer promoting metabolism, the objective of this study is to understand the relationship between a sulfur-microbial diet pattern and colorectal adenomas, which are precursors to colon cancer in Black and Whites using detailed dietary data and clinical data obtained at UI Health and Rush University Medical Center. The analytic sample included 164 participants, who were stratified by low vs. high sulfur amino acid (AA) intake. There were not any statistically significant differences for socio-demographics or basic clinical metrics (e.g., BMI) by low vs. high AA group. Additionally, while there were no statistically significant differences in total adenoma between low and high sulfur AA groups, there was a significant difference in presence and number of hyperplastic polyps. In multivariable linear modeling assessing the dietary variables of interest and polyp overall and by subtype, cysteine grams per 1000 kcal ($\beta = 2.0$; $p < 0.05$) was a positive independent predictor of total count adenoma when controlling for age, BMI, race, and sex. In conclusion, sulfur amino acid intake did not differ by race and race was not a significant predictor of adenoma. However, the findings support that cysteine could play a role in activating proteins that are important in cancer cell growth and proliferation.

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