

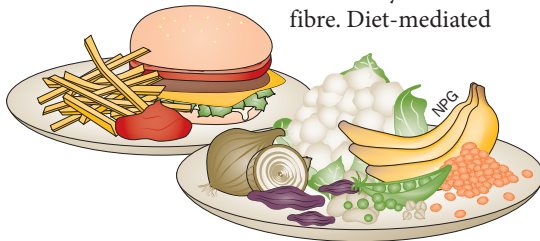
NUTRITION

Diet change alters microbiota and might affect cancer risk

New evidence for the effect of dietary changes on colon cancer risk has been presented in a diet-swap study involving African American and rural African participants that was published in *Nature Communications*.

Colon cancer rates are increased in populations with typical ‘westernized’ eating habits: diets high in fat and animal protein, but low in fibre. “I was struck by the differences I noted between Africans and African Americans during colonoscopy: polyps and cancer were rarely seen in Africans and remarkably common in African Americans,” explains corresponding author Stephen O’Keefe.

In rural Africa, a typical diet contains more carbohydrates and fibre. Diet-mediated



differences in the gut microbiota of African Americans and rural Africans are believed to contribute to the disparity in cancer incidence. The authors wanted to clarify whether a diet change could potentially reverse these microbial profiles and perhaps even influence cancer risk.

In their study, they switched rural Africans from their normal diet to a ‘westernized’ high-fat, low-fibre food regime and African Americans to a low-fat, high-fibre ‘African diet’ for 2 weeks. All participants underwent colonoscopy, and had faecal and colonic mucosal samples taken before and after diet change. Mucosal samples were analysed for proliferation and inflammation markers, two indicators of a potentially elevated cancer risk. Although short in duration, the food interventions showed remarkable effects. Compared with their normal diet, African Americans demonstrated reduced proliferation and inflammation when switched to the ‘African diet’. Conversely, rural Africans on a ‘westernized diet’ exhibited increased

inflammation and proliferation. Analysis of faecal samples indicated that global changes occurred in the metabolome. The rural ‘African diet’ elevated numbers of butyrate-producing microbes, a metabolite that suppresses inflammation. In addition, it decreased microbial production of carcinogenic metabolites, such as secondary bile acids, whereas they were increased in Africans who received the ‘westernized diet’. The abundance of specific microbial species known to promote inflammation and neoplasia progression also underwent changes in association with diet type.

O’Keefe’s advice is simple, “change your diet, change your cancer risk! While long-term confirmatory studies are needed, our studies suggest it is never too late to change your eating habits to reduce your risk of colon cancer.”

Christine Weber

Original article O’Keefe, S. J. D. *et al.* Fat, fibre and cancer risk in African Americans and rural Africans. *Nat. Commun.* 6, 6342 (2015)