

SESSION 8

Prevention of Colorectal and Renal Cancers

S26. Primary Dietary Prevention: Is the Fiber Story Over?

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Colorectal cancer is a major cause of morbidity in developed countries, and epidemiological and experimental research suggests that environmental factors, particularly diet, may play a key etiologic role. Among the various dietary factors that have been proposed to affect the risk and progression of colon cancer, dietary fiber has been of greatest interest, due to the established effects of fiber on the function of the large bowel. By definition, dietary fiber is a heterogeneous group of compounds, consisting of the remnants of plant cells resistant to hydrolysis by human alimentary enzymes. Whole grains, vegetables and fruit are the major contributors of fiber to the diet, and fiber intake is but one characteristic of the overall dietary pattern. These concepts are of importance when evaluating and interpreting epidemiological data. Further, whole grains, a major source of dietary fiber, are rich in a variety of compounds (in addition to fiber) that exhibit various biological activities, including hormonal and antioxidant effects, beyond mechanisms specifically relating to large bowel function. Several case-control studies and a few cohort studies have linked higher fiber intake to reduced risk for colorectal cancer, although the results of these observational studies have been inconsistent. In the two largest US cohort studies of the relationship between fiber intake and risk for colorectal cancer, no significant associations were observed. However, in the more recent, large EPIC observational study, in which a much greater range of fiber intake was examined, higher dietary fiber from foods was associated with an estimated 25% reduction in risk for large

bowel cancer. Well-known limitations of observational studies, which are particularly notable in the collection and interpretation of dietary data, constrain conclusions from the epidemiological observational studies. To date, intervention studies testing the relationship between dietary fiber and colon cancer have focused on only one stage in the development and progression of colon cancer: whether fiber supplementation or diet modification can affect the risk for adenoma recurrence and growth in individuals with a history of adenomatous polyps. In four of these intervention studies, subjects in the intervention arm were prescribed dietary fiber supplements (wheat bran or ispaghula husk), and beneficial effects on adenoma recurrence were not observed over 3-5 years of follow-up. In two studies, the effect of prescribing diet modification (increased fiber and reduced fat intakes) was tested, and no effects on adenoma recurrence were observed. However, dietary biomarker data for the largest of these two studies of diet modification suggest that the change in dietary intakes that was achieved in the intervention arm was not substantial. Thus, the effect of increased dietary fiber intake on risk for colorectal cancer risk has not been adequately addressed in studies conducted to date. Strategies that have been suggested to increase knowledge in this area include longer-term trials and higher levels of dietary fiber intake. Also, laboratory and clinical studies that continue to provide insight about biological mechanisms may help to better target intervention efforts toward the appropriate points in the colon cancer continuum.