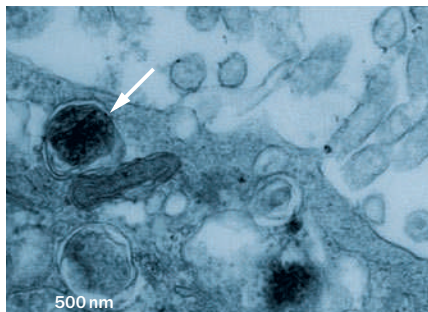
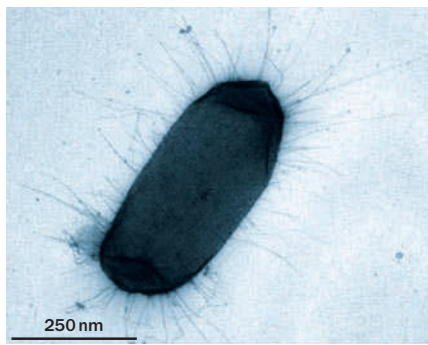


CROHN'S DISEASE

Soluble plant fibers may protect against *E. coli* translocation

Dietary supplementation with soluble plant fibers could have a protective effect against Crohn's disease relapse, according to Barry Campbell and colleagues.

These researchers have assessed the effects of various soluble plant fibers and food emulsifiers on the translocation of



Transmission electron micrographs. Top: a Crohn's-mucosa-associated *Escherichia coli* isolate; bottom: after 4 h infection, seen translocating (arrow) through M cells *in vitro*. Courtesy of C. L. Roberts and B. J. Campbell.

Crohn's-disease-associated *Escherichia coli* isolates across specialized microfold (M) cells of the gut epithelium.

The initial sites of inflammation in Crohn's disease usually overlie Peyer's patches and lymphoid follicles of the colon. There is evidence that bacteria (known to be important in the pathogenesis of IBD) are able to invade the gut epithelium via M cells that are located at these sites. "The incidence of Crohn's disease has been increasing worldwide and diet is believed to be linked to its higher prevalence in industrialized parts of the world," explains Campbell. "So we were interested to see if key dietary factors could modify Crohn's *E. coli* entry through the gut epithelium."

The researchers used M-cell monolayers and human Peyer's patches in Ussing chambers to investigate the effects of soluble plant fibers (from plantain, broccoli, leek and apple) and food emulsifiers on the translocation of *E. coli* associated with Crohn's disease.

"Soluble plant fibers present in plantain (and broccoli) significantly blocked Crohn's *E. coli* translocation across M cells and Peyer's patches," reports Campbell. "These effects occurred at concentrations that

should be readily available *in vivo*."

Leek and apple had no effect, however. Translocation of *E. coli* across M cells was increased in the presence of polysorbate 80, which is a food emulsifier commonly added to processed fatty foods. Campbell speculates that this might be the reason for the increased prevalence of Crohn's disease in developed nations (where the diet is often low in fiber and high in processed food).

The authors believe that dietary supplementation with soluble plant fibers could have a protective effect against relapse of Crohn's disease. In fact, a clinical trial is already underway to test whether a new plantain-based food product could be used to prevent relapse in patients with the disease. "Intervention studies are also needed to assess the effects of dietary changes in soluble plant fiber and emulsifier intake on Crohn's disease activity," concludes Campbell.

Isobel Franks

Original article Roberts, C. L. *et al.* Translocation of Crohn's disease *Escherichia coli* across M-cells: contrasting effects of soluble plant fibres and emulsifiers. *Gut* 59, 1331-1339 (2010)