Introduction Pathogen-related diarrhoea causes significant morbidity and mortality worldwide. Our studies have previously shown that soluble dietary fibre (non-starch polysaccharides, NSP), particularly from plantain bananas, can inhibit epithelial adherence of diarrhoeal pathogens in vitro and ex vivo (J. Nutr. Biochem. 2013;24:97–103).

Methods Here we aimed to establish whether plantain NSP exerts its inhibitory effect on pathogen adhesion to intestinal epithelium through either interaction with bacterial carbohydrate-binding proteins (adhesins) or via action on the epithelium itself. Prior to infection (MOI 100) of Caco2 human intestinal epithelial cells with C. difficile (2 h), Salmonella Typhimurium LT2 (1.5 h) or ETEC (1.5 h), monolayers were either 1) pre-treated with plantain NSP (0–10 mg/mL – a concentration that is readily achievable in vivo with dietary supplementation) for 30 min followed by inoculation, 2) pre-treated for 30 min, plantain NSP removed by thorough sterile saline washes before infection, or 3) infected with bacteria that had been pre-treated with NSP for 30 min followed by washing to remove non-adherent fibre. Following infection, non-adherent bacteria were removed by sterile washes and adherent bacteria enumerated by overnight culture colony counts.

Results Plantain NSP (5 mg/mL) significantly decreased bacterial adhesion to Caco2 (% inhibition of adhesion for LT2 89 ± 5%; C. difficile 92.9 ± 2%; ETEC 65.8 ± 1%; all P < 0.001) compared to untreated cells. When plantain NSP was added to epithelial monolayers followed by washing to remove non-adherent fibre prior to infection, bacterial adherence was still markedly reduced (LT2 59.2 ± 5% inhibition; C. difficile 59.2 ± 5%; ETEC 45.0 ± 2%, all P < 0.01). Pre-incubation of bacteria with plantain NSP followed by removal with sterile washes prior to infection resulted in no significant inhibition of adhesion compared to untreated controls. Thus inhibition of bacterial adherence to the epithelium by soluble NSP is mediated via an interaction between the NSP and the epithelium. This is supported by data from Ussing chamber experiments (PLoBiol; in press) showing that pre-treatment of human ileal tissue with plantain NSP results in a marked increase in transmucosal short circuit current (Isc) implying Cl- secretion (peak ∆Isc 5.86 ± 1.89 μA cm−2 50 min post-NSP addition; P < 0.01) without any effect on TEER.

Conclusion Soluble plantain NSP exerts its inhibitory effect on C. difficile, ETEC and Salmonella adherence to the intestinal epithelium via action on the epithelium rather than through interaction with bacterial adhesins. This effect is probably mediated by increased epithelial Cl- secretion.


Introduction The advent of small bowel capsule endoscopy (CE) has greatly improved the diagnosis of small bowel tumours. Double balloon enteroscopy (DBE) is the interventional counterpart to CE and has the advantage of direct visualisation of small bowel pathology, biopsy and therapeutic capability. There is however a paucity of data on the use of DBE for small bowel tumours. The aim of this study was to assess the utility of DBE for small bowel tumours and to assess its impact on the diagnostic pathway in this cohort.

Methods Data was collected prospectively on all DBE procedures performed routinely between July 2006 and December 2013 particularly for the indication of small bowel tumours.

Disclosure of Interest None Declared.

Reference
10.1136/gutjnl-2014-307263.587

Disclosure of Interest None Declared.

Reference
10.1136/gutjnl-2014-307263.588