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Positive relationship between plant diversity dietary patterns and disease activity in Australian adults with Inflammatory Bowel Disease

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Diet is implicated in the development of Inflammatory Bowel Disease (IBD). However, the role of diet in reducing inflammation and managing prevalent disease is unclear [1–3]. Previous studies have analysed the relationship between dietary patterns and occurrence of flares or symptoms, but not disease activity or inflammation [4–5]. It is important to explore the role of habitual diet in management of IBD to provide targeted dietary recommendations. We explored the relationship between dietary intake with disease activity and inflammation in an Australian adult cohort with and without IBD. We analysed dietary and clinical data from the Australian IBD Microbiome (AIM) study. AIM is a prospective longitudinal cohort study of adults and children with Crohn's Disease (CD), Ulcerative colitis (UC) and healthy controls (HC). Habitual dietary intake of food groups, fibre, polyphenols and fermented foods was collected by merging dietary data from 3-day food records and food frequency questionnaires with PhenolExplorer and the Australian Fibre Categories Database. Dietary patterns were explored using Principal Component Analysis (PCA) and cluster analysis (CA) in IBM SPSS Statistics (V29). Associations between dietary intake, clinical disease activity categorised as remission or active, and faecal calprotectin (FCAL) were explored in adult participants. A total of 412 participants (IBD = 223, HC = 189) were included. FCAL data was available for 211 participants (HC = 100, CD = 49, UC = 62). Median (IQR) FCAL at baseline was 20 (20) mg/kg for HC and 33 (127) mg/kg for IBD, indicating clinically irrelevant inflammation (FCAL >50mg/kg = clinical inflammation). PCA identified 7 distinct dietary patterns for adults with IBD. A dietary pattern of high plant diversity was associated with active CD. In the total IBD cohort, low association to a 'Prudent' pattern was positively associated with low FCAL, and high association to a 'Meat-eaters' dietary pattern was positively associated with moderate FCAL. CA revealed 3 distinct clusters amongst participants with IBD. No significant difference between diet cluster and disease activity or FCAL was seen. There were no significant differences in intake of fibre or polyphenols between remission vs active disease in participants with IBD. A significant difference between total, soluble and insoluble fibre and FCAL categories was seen with a higher fibre intake associated with lower FCAL. Higher plant-diversity and 'Prudent' dietary patterns are associated with active disease and higher FCAL in Australian adults with IBD. Reverse causality cannot be ruled out, with analysis of larger cohorts and clinical trial data needed to clarify this.

Keywords: inflammatory bowel disease; dietary pattern; inflammation; Crohn's Disease

Ethics Declaration

Yes

References

1. Peters V, Bolte L, Schuttert E *et al.* (2022) *J Crohns Colitis* **16**, 931–939.
2. Hou JK, Abraham B, EI-Serag H *et al.* (2011) *AJG* **106**, 563–573.
3. Bischoff SC, Escher J, Hébuterne X *et al.* (2020) *Clinical Nutrition* **39**, 632–653.
4. Limketkai BN *et al.* (2022) *Inflamm Bowel Dis* **28**(11)
5. Peters V *et al.* (2021) *J Crohns Colitis* **15**(8)

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