2023. β fructans

RCT/ fiber/ UC

Unfermented b-fructan Fibers Fuel Inflammation in Select Inflammatory Bowel Disease Patients

1) in vitro study with cell lines cultured ex vivo from biopsies of UC/CD and healthy population. 2) RNA isolation and gene expression analysis. 3) Microbiota analysis. 4) gas chromotography for volatile fatty acids. 5) Food questionnaire analysis 6) Randomized, control trial.
*RCT included patients with UC in remission who were supplemented with FOS and inulin 15g/day for 6 months.

Primary endpoints: To investigate the role of beta fructans in IBD. RCT designed to assess the efficacy of beta fructans in preventing relapse in adult patients with UC in symptomatic remission.

Results:

- Unfermented beta fructan fibers induced proinflammatory cytokines in a subset of IBD intestinal biopsies cultured ex vivo.
- Fermentation of beta fructans by gut microbiota reduced the inflammatory response in healthy controls & IBD in remission.
- RCT: supplementing with beta fructans showed a positive impact reducing the risk of biochemical relapse (defined by FC >200) vs placebo. However symptomatic relapse was not different than placebo arm.

Conclusions:
Although fibers are typically beneficial in individuals with normal microbial fermentative potential, some dietary fibers have detrimental effects in select patients with active IBD who lack fermentative microbe activities. The study is publicly accessible at the U.S. National Institutes of Health database

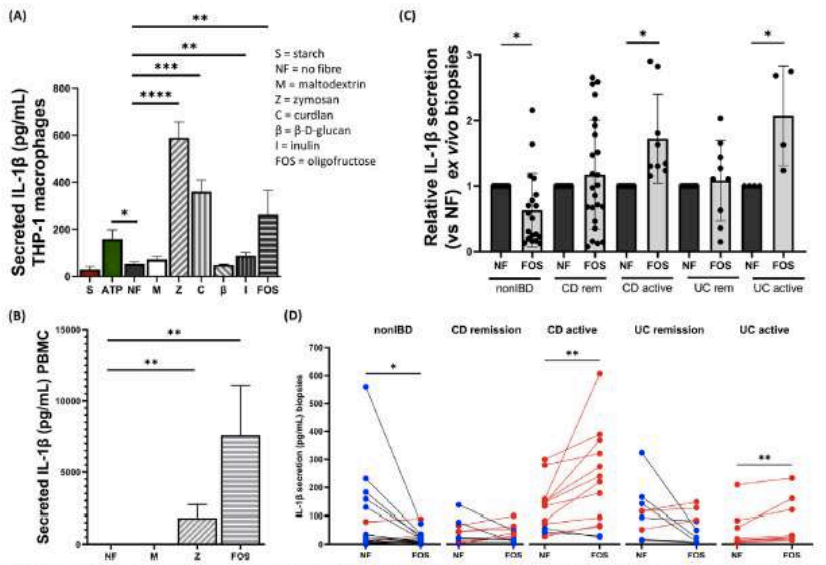

Figure 1. Unfermented dietary FOS induces a proinflammatory immune response in THP-1 macrophages, PBMCs, and patient biopsy tissues cultured ex vivo. ELISA for secreted IL-1β (marker of inflammation; supernatants) was performed in (*A*) THP-1 macrophages in response to starch (S), ATP, NF, maltodextrin (M), zymosan (Z), curdlan (C), oat β-D-glucan (B), inulin (I), or FOS, stimulated for 24 hours; (*B*) human PBMC in response to NF, maltodextrin, zymosan, and FOS; and (*C* and *D*) pediatric non-IBD (n = 19), CD (n = 33), and UC (n = 13) patient biopsies cultured ex vivo with NF or FOS (5 mg/mL) for 24 hours. Results are displayed as (*C*) fold-change in FOS/NF secretion for individual patients for ease of comparison, or (*D*) paired raw IL-1β secretions from biopsy tissues (decreased [*blue*] and increased [*red*] IL-1β secretion; FOS vs NF). *$P < .05$, **$P < .01$, ***$P < .001$, ****$P < .0001$.

*Note: the content of this study far exceeds the capacity of this summary as many relevant information was found. I would recommend you to read it if you can.

Armstrong HK et al. Gastroenterology. 2023; 164: 228-240