

The Effect of Arabinoxylan on Gastrointestinal Tolerance in Generally Healthy Adults: A Randomized, Placebo-Controlled, Crossover Study

Oliver Chen, Traci Blonquist, Kristen Sanoshy, Kathleen Kelley, and Eunice Mah

Biofortis Research, Merieux NutriSciences

Objectives: Arabinoxylan (AX) is a non-digestible carbohydrate composed of (1→4)- β -D-xylan polymers that contain arabinose and varying uronic acid residues. AX was formally identified as a dietary fiber by the U.S. FDA for its effect on maintenance of healthy blood glucose levels. The primary objectives of this human trial were to examine the effects of a novel prebiotic AX wheat fiber extract (87.9% AX) produced by upcycling crop leftovers, such as wheat straw, on gastrointestinal (GI) tolerance, bowel habits, and stool consistency in adults.

Methods: A randomized, double-blind, placebo-controlled, crossover trial with three test periods separated by 2-week washout periods was conducted. Forty-five subjects (M/F: 29/16, aged 47.8 ± 9.6 y, 27.9 ± 4.4 kg/m²) were randomly assigned to consume maltodextrin placebo (PLA) or AX wheat fiber extracts providing 6.37 g AX/d (LAX) or 12.74 g AX/d (HAX) for 3 weeks. Study products were mixed thoroughly with 16 oz. water and consumed twice a day, once each in

the morning and evening, with or without food. During the 7 days prior to the start of any intervention (baseline) and prior to the end of each test period, GI symptoms, as well as bowel movement ratings and stool consistency and frequency, were evaluated using the GI Tolerability Questionnaire (GITQ), which assesses abdominal cramping, bloating, burping, flatulence, nausea, reflex, and stomach rumbling, and the Bowel Habits Diary with Bristol Stool Scale.

Results: There were no statistically significant differences between PLA, LAX, and HAX in the area under curve of the GITQ composite score, as well as severity rating of individual symptoms ($P > 0.05$). Additionally, stool frequency (median ranging 7.5–8.0 over 7 days), stool consistency (median ranging 3.71–3.84), straining during bowel movements, discomfort during bowel movements, and sensation of incomplete evacuation did not differ between interventions ($P > 0.05$). There were no reported adverse events that were judged to be related to the AX wheat fiber extract product.

Conclusions: Consumption of prebiotic AX wheat fiber extract product containing 6.37 or 12.74 g AX per day for 3 weeks did not affect GI tolerance symptom severity and bowel habits and stool consistency in adults and did not result in related adverse events, suggesting that the product is safe and well-tolerated.

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