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From waste to Wellness: Impact of Fiber-Rich Brewer's spent grain on glycemia and insulinemia

Abstract:

Dietary fibers improve human health by lowering the risk factors for metabolic disorders, including hyperglycemia, hyperinsulinemia, insulin resistance, and hypercholesterolemia. To this end, a monocentric, randomized, cross-over, double-blind, placebo-controlled clinical trial is designed to assess the hypoglycemic and hypoinsulinemic response of fibers-enriched food supplement based on brewer's spent grain (BSG) in subjects with slightly impaired glucose tolerance. The chemical analysis of BSG extract showed the presence of bioaccessible ferulic acid (91.3mg/100g), resistant starch (14.64g/100g), arabinoxylans (7.50g/100g), β -glucans (1.92g/100g), and other soluble fibers (6.43g/100g). In a cross-over clinical design, 40 normoglycemic patients were randomly assigned to one of two groups (n = 20, each), supplemented with food supplement or placebo. Postprandial blood glucose levels were significantly lower in food supplement group as compared to placebo, after 90 and 120 minutes of the treatment; nevertheless, the two glycemic curves overlapped substantially at baseline and in the first 60 minutes. The clinical outcome was supported by the considerable decrease in postprandial insulinemia in subjects supplemented with BSG extract. No adverse effects were reported with the food supplement by enrolled subjects. In conclusion, this study demonstrated improved glucose metabolism and insulinemic response with BSG extract supplementation in normoglycemic subjects with mild insulin resistance.

Biography

Hammad Ullah obtained his PhD degree in 2023 and is currently working as a Postdoctoral fellow, both at the University of Naples Federico II Italy. His research activity focuses mainly on the comprehensive investigation of natural products, with the final aim of the development of new food supplements and functional food ingredients. He has authored more than 60 articles, 1 book, and 7 book chapters. His work has been recognized for its significance by MEDWELL Award for Best PhD Thesis (2023), PSE Dra. Mariola Macías Award (2023), Young Research Award at MONASH INITIATE 2022, and Best Oral Presentation Award at 1-EuSPMF, Serbia (2022).