Hypoglycemic Effect of Date seed, A clinical Trials

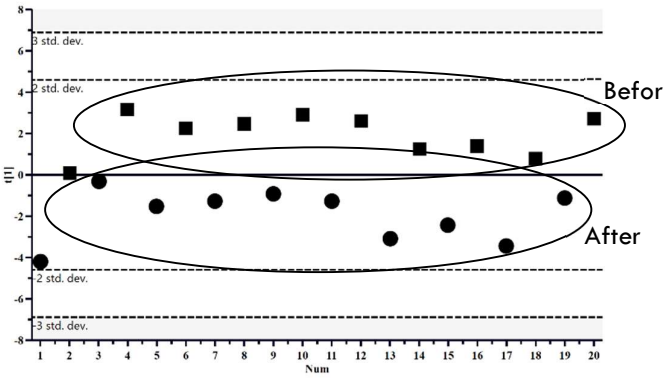
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Abstract

Statement of the Problem: Diabetes mellitus is a metabolic disease characterized by chronic hyperglycemia. Long-term high blood glucose can cause various complications, including diabetic retinopathy (DR) and blindness, which seriously affect the quality of life in patients. The date seed has a long history in traditional medicine also great potential health benefits, e. g., anti-hyperglycemic and anti-hyperlipidemic due to high polysaccharide content. The current study was designed to investigate the effects of date seed powder consumption on changes in the number of blood biomarkers. **Methodology:** A clinical trial using 10 participants has been conducted to examine the impact of date seed powder on blood biomarkers. Each participant received 30 g of date seed powder daily for four weeks. Fasting Blood Sugar (FBS), Complete Blood Count (CBC), High-sensitivity C-reactive Protein (hs-CRP), Ferritin, Erythrocyte Sedimentation Rate (ESR), and serum triglyceride (TG) were measured. **Conclusion:** The PLS-DA model separated participants into two groups based on time points. The VIP discriminative variables, including TG, CRP, FBS, RBC, and RDW, were analyzed using univariate data analysis and found to be significantly different before and after intervention by DSP ($p < 0.05$). The results showed a significant reduction in TG, CRP, FBS and an increase in RBC and RDW. High FBS (≥126 mg/dl) is one of the most important biomarkers for the diagnosis of diabetes. Although the FBS for all participants was in the typical medical range, a significant reduction was observed in the current study after DSP intervention. Several studies have reported the hypoglycemic effect of polysaccharides. The most common suggested mechanism for the hypoglycemic effect of polysaccharides is modulation of GUT microbiota, increased blood insulin levels, reduction of pancreatic glucagon, higher glycogen synthesis, and increased glucose metabolism in peripheral tissues.

Image



PLS-DA model separated participants into two groups (date seed powder as X variable and timepoint as Y variable; model parameters $R^2Y = 0.77$, $Q^2Y = 0.61$, CV-ANOVA $p = 0.0002$).

Recent Publications

1. A. Bendahou, A. Dufresne, H. Kaddami, Y. Habibi, Isolation and structural characterization of hemicelluloses from palm of Phoenix dactylifera L, Carbohydrate Polymers 68(3) (2007) 601-608.
2. B.R. Yasin, H.A. El-Fawal, S.A. Mousa, Date (Phoenix dactylifera) polyphenolics and other bioactive compounds: A traditional islamic remedy's potential in prevention of cell damage, cancer therapeutics and beyond, International journal of molecular sciences 16(12) (2015) 30075-30090.
3. S. Maqsood, O. Adiamo, M. Ahmad, P. Mudgil, Bioactive compounds from date fruit and seed as potential nutraceutical and functional food ingredients, Food chemistry 308 (2020) 125522.
   H. Noorbakhsh, M. Yavarmanesh, S.A. Mortazavi, P. Adibi, A.A. Moazzami, Metabolomics analysis revealed metabolic changes in patients with diarrhea-predominant irritable bowel syndrome and metabolic responses to a synbiotic yogurt intervention, European journal of nutrition 58(8) (2019) 3109-3119.
5. A. Kamal-Eldin, N. George, B. Sobti, N. AlRashidi, S. Ghnimi, A.A. Ali, A.A. Andersson, R. Andersson, A. Antony, F. Hamed, Dietary fiber components, microstructure, and texture of date fruits (Phoenix dactylifera, L.), Scientific Reports 10(1) (2020) 1-11.



Biography

Being a Food microbiology PhD., I am interested in working on Probiotics, bioactive compounds, Gut Microbiota, and Metabolomics. Recently I have been a postdoctoral researcher working on the biological activity of date polysaccharides.

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