

5th European Nutrition and Dietetics Conference

June 16-18, 2016 Rome, Italy

Hypocholesterolemic effect of whole barley bread compared to whole wheat bread in diabetes induced hyperlipidemic rats

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Whole barley flour is a rich source of beta-glucan which is approved for cholesterol lowering effect. This makes barley a promising diet to improve health conditions related to metabolic diseases, especially Diabetes Mellitus. This study aims to investigate the hypocholesterolemic effect of Whole Barley Bread (WBB) on lipid profile composition in diabetes induced hyperlipidemic rats in comparison with Whole Wheat Bread (WWB). The biochemical effects of WBB compared with WWB were investigated in streptozotocin induced diabetic rats which were fed high cholesterol diet to cause mild hyperlipidemia. Thirty five rats were divided into 5 groups (7 rats each) (G1 control (+) and G2 control (-) as references) and 3 treatments fed on experimental diets, containing 100% WWB (G3), (50% WBB+50% WWB) bread (G4) and 100% WBB (G5), for eight weeks. Lipid profile composition total cholesterol (TC), triglycerides (TG), HDL, LDL and atherogenic index A.I. percentage) was investigated initially and after 8 weeks. At the end point, HDL was significantly higher in G5 than in G3 (24.03 mg/dl (+41.18%) and 16.67 mg/dl (-7.36%) (P=0.005)), respectively. The LDL-reducing effect in G5 was (57.57 mg/dl (-6.44%) compared to 14.8% increase in 100% WWB group from initial point. TG and TC decreased significantly (-16.14%, -7.01%, (p≤0.05)) in G5 compared with +3.59% and -3.59% in G3. By analysis of A.I. percentage the decrease was -36.49% and -4.21% in G5 and G3, respectively (p<0.005) comparing groups. G4 showed intermediate insignificant changes. Dietary supplementation with whole barley bread increases HDL cholesterol and also improves the total lipid profile and may be used as anti-diabetic diet replacing WWB.

Biography

Alzahraa Mahmoud Hassan Motawei has been awarded her PhD in 2014 from Mansoura University and Post-doctoral research in Preventive and Clinical Nutrition studies from Copenhagen University, Faculty of Science for one year 2015-2016. She is a Lecturer at Food Industries Department, Faculty of Agriculture. She has experience in Molecular Biotechnology from FH Aachen in Germany, 2011, a premier applied bio-sciences institution.

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