Effect of Fortified Bread with turmeric and Some Plant Seeds on Diabetic Rats
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Abstract:

The present work was conducted to manufacture fortified bread with turmeric and some plant seeds suitable for diabetes and study the effect of fortified turmeric bread with fenugreek, flaxseed and pumpkin seeds on glucose and lipids profile in serum of diabetic rats. Two main experimental groups were established: Group 1 (n = 6 rats) used as a negative control group fed on diet containing 300 g unfortified bread. Group 2 (60 rats): were injected with alloxan (150 mg/kg body weight) to induce hyperglycemia and fed on basal diet, then this group was divided into ten subgroups (6 rats each). Subgroup (1) fed on diet containing 300 g unfortified bread (as a positive control group). Subgroups (2) fed on diet containing 300 g fortified bread with (1.5%) turmeric. Subgroups from (3 -10) fed on diets containing 300 g fortified turmeric bread with 5% and 15% (fenugreek, flaxseed, pumpkin seeds and combination of all seeds), respectively. Injected rats with alloxan caused significant decrease in food intake, BWG %, HDL-c, while the mean values of serum glucose, cholesterol, triglycerides, LDL-c, VLDL-c, heart weight / body weight % increased significantly in the positive control group, as compared to the negative control group. Treated diabetic rats with the fortified bread with turmeric (1.5%) and fortified turmeric bread with fenugreek, flaxseed, pumpkin seeds and combination of all these seeds improved all parameters, especially the group fed diet containing fortified turmeric bread with the combination of fenugreek, flaxseed and pumpkin seeds (15%).

Key words: hyperglycemia, bread, turmeric, fenugreek, flaxseed, Pumpkin, glucose, lipids profile, serum.

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The effect of chocolate with nuts on hyperglycemia and its complications in diabetic rat model

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Background: Recent data is linking consumption of flavonoid-rich cocoa products to the promotion of health.

Objective: To evaluate the beneficial effect of consuming black chocolate containing fructose and (almond or hazelnut) on hyperglycemia and its complications in diabetic rat model.

Design: Two main experimental groups were established: Group 1 (n = 7 rats) used as a negative control group fed on basal diet (B S -). Group 2 (49 rats): injected with alloxan (150 mg/kg body weight) to induce hyperglycemia and fed on (B.D.), then this group was divided into seven subgroups (7 rats each). Subgroup (1) fed on B.D. (as a positive control B D + ). Subgroups (2 & 3) fed on basal diet containing 50 g. and 100 g. chocolate without nuts/kg diet, respectively. Subgroup (4 & 5) fed on basal diet containing 50 g. and 100 g. chocolate with almond/kg diet, respectively. Subgroup (6 & 7) fed on basal diet containing 50 g. and 100 g. chocolate with hazelnut/kg diet, respectively. The feeding study continued for 4 weeks then blood samples were collected and the liver organ was separated for laboratory investigations.

Results: Food intake did not change significantly between all treated groups, as compared to the (-) and (+) two control groups. Gain in body weight expressed in percentage (BWG %) decreased significantly in the (+) control, compared with respective mean value of the (-) control. Diabetic rats consuming chocolate-containing diets with or without nuts showed significant improvement in BWG%, as compared to the respective mean value obtained with (+) control group. All diabetic rats consuming diets containing chocolate with or without nuts has significant lower mean serum glucose level compared with the respective mean value in the (+) control. The consumption of the chocolate containing diets led also to significant reductions in the lipid profile of the liver; i.e., cholesterol, triglycerides, low and very low density lipoprotein-cholesterol LDL-c and VLDL-c, as compared to the (+) control. The level of high density cholesterol concentration was the only lipid parameter, which was elevated in the liver of the diabetic rats after consuming the chocolate containing diet. The consumption of the chocolate containing diets led to improvement of the liver function as evidenced with lowering in the mean activities of aspartate amino transferase [AST] and alanine amino transferase [ALT] compared to the respective mean values of the (+) control. The mean uric acid, urea nitrogen and creatinine concentrations; biomarkers of kidney function were significantly lower in all diabetic groups consuming diets containing chocolate with or without nuts than the respective mean values found in the (+) control rats.
Conclusions: Incorporating of chocolate with nuts at 10% in the diet can ameliorate the pathogenesis associated with diabetogenesis.
The effect of chocolate with nuts on hyperglycemia and its complications in diabetic rats

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ABSTRACT

The present work was conducted to study the influence of black chocolate prepared with fructose and (almond or hazelnut) on hyperglycemia and its complications in diabetic rats. Two main experimental groups were established: Group 1 (n = 7 rats) used as a negative control group fed on basal diet (B.D). Group 2 (49 rats): injected with alloxan (150 mg/kg body weight) to induce hyperglycemia and fed on (B.D.), then this group was divided into seven subgroups (7 rats each). Subgroup (1) fed on B.D. (as a positive control group). Subgroups (2 & 3) fed on basal diet containing 50 g. and 100g. Chocolate without nuts/kg diet, respectively. Subgroup (4 & 5) fed on basal diet containing 50 g. and 100 g. chocolate with almond/kg diet, respectively. Subgroup (6 & 7) fed on basal diet containing 50 g. and 100 g. chocolate with hazelnut/kg diet, respectively.

Food intake did not changed significantly between all treated groups, as compared to the control groups (- & +). Body weight gain% ( BWG %) decreased significantly, while liver, kidney and heart weight / body weight % increased significantly in the positive control group, as compared to the negative control group. Treated diabetic rats with the two levels of chocolate with or without nuts led to significant
improvement in BWG% and organs weight / body weight %, as compared to the positive control group.

The mean values of serum glucose, cholesterol, triglycerides, LDL-c, VLDL-c, uric acid, urea nitrogen, creatinine, AST and ALT decreased significantly in all diabetic groups which were treated with two levels from chocolate with or without nuts, while serum HDL-c increased significantly, as compared to diabetic group (control positive). The best results were found in the group fed on diet containing 100 g. chocolate with almond/kg diet and group fed on diet containing 100 g. chocolate with hazelnut/kg diet.

*Key words:* chocolate, cocoa, almonds, hazelnut, hyperglycemia, lipid fraction, kidney function, liver enzymes.

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Effect of fortified bread with some plant seeds on diabetic rats

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ABSTRACT

The present work was conducted to manufacture fortified bread with turmeric and some plant seeds suitable for diabetes and study the effect of fortified turmeric bread with fenugreek, flaxseed and pumpkin seeds on glucose, lipids profile, kidney functions and liver enzymes in serum of diabetic rats. Two main experimental groups were established: Group 1 (n = 6 rats) used as a negative control group fed on diet containing 300 g unfortified bread. Group 2(60 rats): were injected with alloxan (150 mg/kg body weight) to induce hyperglycemia and fed on basal diet, then this group was divided into ten subgroups (6 rats each). Subgroup (1) fed on diet containing 300 g unfortified bread (as a positive control group). Subgroups (2) fed on diet containing 300 g fortified bread with (1.5%) turmeric. Subgroups from (3 -10) fed on diets containing 300 g fortified turmeric bread with 5% and 15% (fenugreek, flaxseed, pumpkin seeds and combination of all seeds), respectively. Injected rats with alloxan caused significant decrease in food intake, BWG %, HDL-c, calcium and phosphorus while the mean values of serum glucose, cholesterol, triglycerides, LDL-c, VLDL-c, uric acid, urea nitrogen, creatinine, AST, ALT, and ALP, heart, kidney and liver weight / body weight % increased significantly in the positive control group, as compared to the negative control group. Treated diabetic rats with the fortified bread with turmeric (1.5%) and fortified turmeric bread with fenugreek, flaxseed, pumpkin seeds and combination of all these seeds improved all parameters, especially the group fed diet containing fortified turmeric bread with the combination of fenugreek, flaxseed and pumpkin seeds (15%).

Key words: hyperglycemia, bread, turmeric, fenugreek, flaxseed, Pumpkin, glucose, lipids profile, kidney functions, liver enzymes, calcium, phosphorus, serum.
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