PREPARATION AND EVALUATION OF FUNCTIONAL FOODS CONTAINING PREBIOTICS AND *Saccharomyces boulardii* FOR COMBATING DIABETES COMPLICATIONS IN RATS

By

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B.Sc. Agric. Sci. (Food Science), Fac. Agric., Cairo Univ., 2003
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APPROVAL SHEET

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Title of Thesis: Preparation and Evaluation of Functional Foods Containing Prebiotics and *Saccharomyces boulardii* for Combating Diabetes Complications in Rats.
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Department: Agric.Biochemistry **Approval: 18/1/2017**

ABSTRACT

The current study was planned to evaluate the hypoglycemic, hypolipidemic and antioxidant activities of some plants rich in prebiotic (chicory leaves, jerusalem artichoke, artichoke, psyllium seeds, barley, oat, fenugreek and locust bean) and two prepared type of symbiotic cheeses (first type was inoculated with *Saccharomyces boulardii* and supplemented with 3% barley in powder form and the second type was inoculated with *Lactobacillus gasseri* and supplemented with 3% jerusalem artichoke in powder form) as a functional foods in rats fed high fat-high cholesterol diet then injected with low dose of streptozotocin to induce diabetes. In the first experiment of the present study the hypoglycemic, hypolipidemic and antioxidant activities of the aforesaid items were evacuated in diabetic rats fed on basal diet containing the aforesaid items each separately. Blood glucose, lipid profile, kidneys and liver functions as well as internal antioxidant enzymes activities were assayed. Also the histopathological changes of heart, liver, pancreas and kidney tissues of different experimental groups were examined. In the second experiment of the present study the hypoglycemic, hypolipidemic and antioxidant activities of chicory leaves, psyllium seeds, oat and fenugreek were evaluated in diabetic rats fed on high fat diet containing 20% of each plant separately. Results of the first experiment disclosed that all the studied items caused reduction in blood glucose, total cholesterol, LDL-C and triglycerides in addition to the improvement in kidneys and liver functions and the internal antioxidant enzymes activities. All the studied items retard the histopathological changes of heart, liver, pancreas and kidney tissues. Results of the second experiment disclosed that chicory leaves, psyllium seeds, oat and fenugreek showed protective effect against the high fat diet in diabetic rats. Results revealed that all studied plants rich in prebiotic as well as the two prepared type of symbiotic cheese showed promising effect towards diabetes and its complications.

Key words: Probiotic, prebiotic, diabetes, high fat diet, streptozotocin and functional foods.

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