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**Document Title** : Biochemical studies of the effect of dietary fibers on lipid and carbohydrate metabolism in rats  
دراسات كيميائية حيوية لتأثير الألياف الغذائية على أيض الدهون والكربوهيدرات في الجرذان

**Document Language** : Arabic

**Abstract** : Recent work has focused on the role of natural and purified fiber preparations in the regulation of cholesterol metabolism. Although fiber has been increasingly recognized as an important dietary constituent, controversy and confusion still exist about the physiological effects of dietary fiber. The aim of the present study was to assess the influence of various sources of dietary fibers (natural and purified) on levels of serum & liver lipids, serum lipoproteins and serum glucose of rats. Also to determine whether the effects of these diets were reflected on a number of performance parameters. Seventy-two Wister rats were divided into six groups. One group of rats was fed on the control diet, while two groups of rats were fed on the control diet supplemented with oat bran or wheat bran as sources of natural fiber. The other three groups of rats were fed on the control diet supplemented with either pectin, guar gum or cellulose as sources of purified fiber. Oat bran and wheat bran diets caused significantly reduced the levels of serum cholesterol, triglycerides and also in the liver cholesterol levels, while they did not have an effect on the serum levels of HDL and LDL-cholesterols compared to the control diet. The HDL- and LDL-cholesterol ratio was higher in the oat bran than in the wheat bran groups. Serum glucose level was lowest in rats fed the oat bran diet. The oat bran and the wheat bran diets reduced food consumption relative to the control diet. It can be concluded therefore, that the oat bran and the wheat bran diets have similar hypercholesterolemia effect in rats, while the oat bran diet is more useful in lowering the risk of coronary heart disease. Moreover, the oat bran diet has a hypoglycaemic effect compared to the wheat bran diet. Comparing the control diet with the control diet supplemented with various sources of purified fibers, cellulose had no hypolipidemic effect, whereas the pectin diet significantly reduced levels of cholesterol and triglycerides in the serum and in the liver and it reduced levels of serum LDL-cholesterol and glucose while the pectin diet increased serum level of HDL-cholesterol. The guar gum diet was able to lower levels of cholesterol and triglycerides in the serum and in the liver and also to increase the serum HDL-cholesterol level of rats. But these effects were still less than that obtained with the pectin diet. Food intakes and rates of body weight gain were slower in the groups of rats which were given the pectin or the guar gum diet compared to the control diet. It can be concluded that the pectin and the guar gum diets can alter the concentration of serum total cholesterol and lipoproteins. Furthermore, pectin has been one of the more consistent in accomplishing these effects