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**Title of Thesis:** "Chemical and biological evaluation of cake products  
containing resistant starch and dietary fiber."

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### **Abstract**

This investigation was carried out to study the possibility of producing special bakery products with low calories such as cakes and biscuits by using rich sources of dietary fiber, i.e wheat bran, carrot powder, resistant starch and their fractions through replacement of wheat flour (72% extraction) by different levels, (20, 30, 40 and 50%). The out come products were evaluated physically, organoleptically and biologically. The Results showed that dietary fiber contents of wheat bran and wheat bran (F2) showed the highest values (43.19 and 48.23%) respectively, followed by wheat bran (F1) 36.81% then resistant starch (F1 and F2). The physical properties showed that carrot powder and its fractions contained the highest values for swelling power and water holding capacity. The rheological study showed that addition of different sources of dietary fiber to wheat flour lead to increase the water absorption and dough development time, while the results of amylograph indicated that addition of all levels of fiber sources to wheat flour lead to decrease the maximum viscosity, addition of the different dietary fiber sources lead also to slight increase in weight and decrease in volume, so specific volume was decreased in sponge cake while the same additives decreased the diameter of biscuits. Sensory evaluation showed that addition of 20% of native and resistant starch (fractions F1, F2) to wheat flour for production of sponge cake and biscuit was found to be have no significant effect compared to control sample. Feeding of hypercholesterolemic rats on diets containing 20% of dietary fiber sources showed a decrease in body weight gain, total food intake and food efficiency. A slight increase was observed for organs weight compared to rats fed basal diet (negative control). The results also indicated that triglycerides, total cholesterol, LDL-cholesterol, total lipids, and liver function values were decreased. Also feeding of rats on diet contained 20% of resistant starch resulted in an improvement of absorption of Zn, Fe, Ca and Mg.

**Keywords:** Fiber, Dietary, Rats, Cake, Absorption, Resistant starch,  
Lipid profile

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