UTILIZATION OF SOME RICH-FIBER SOURCES IN PRODUCTION OF BISCUIT AND CAKE

BY

MOHAMED EID MOHAMED HASSAN

B.Sc. Agric. Sci. (Technology and Cultivation of Desert Land Reclamation, Open Education), Fac. Agric., Cairo Univ., 2005

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APPROVAL SHEET

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Date 1 / 6 / 2014

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ABSTRACT

This study was carried out to investigate the effect of replacing wheat flour (72 % extraction) by some fiber sources at different levels on charactertics of wheat flour and cake and biscuits quality. The produced biscuits samples were also evaluated for its biological effects. The fiber sources used were wheat bran, orange peels powder and carrot powder and the replacement levels were 15, 20, 25 and 30 % to produce biscuits. Also, the fiber sources were used for cake production at levels of 10, 20, 30 and 40 %. The obtained results indicated that orange peels powder showed the highest fiber content (12.00 %) and wheat flour showed the lowest content (0.30 %). Carrot powder showed the highest ash content (8.17 %) compared with wheat flour (0.68 %). The results indicated that addition of these fiber sources to wheat flour (72 % extraction) led to sharp increase in fiber and ash contents of the resulted biscuits samples. With respect to organoleptic evaluation, the obtained results indicated that biscuits samples produced using wheat bran at level of 15 % was not significantly different from control sample for all the evaluated characteristics. The biscuits samples produced using wheat bran at level of 20 % was not significantly different from control sample for color, taste, odor and overall acceptability with exception of texture and shape. On the other hand the biscuits samples produced using orange peels powder or carrot powder were found to be significantly different from control sample for all the evaluated characteristics and at all replacement levels. Cake samples prepared by the addition of 10 % fiber sources were not significantly different from control sample. While increase the addition led to significantly different from control in organoleptic evaluation. Also, the results showed that addition of dietary fiber sources led to decrease in the volume and increase of weight compared to control. Concerning the rheological properties, the added fiber sources led to increase the water absorption and dough stability. The elasticity and proportional number values were also increased while extensibility and energy were decreased. The biological evaluation of the biscuits produced from wheat flour (72 % extraction) with or without replacement by 20 % of each of fiber sources under study revealed that the feed efficiency ratio was higher in the group of rats fed on wheat bran biscuits diet (G4) 4.7 % followed by orange peels powder biscuits diet (G5), carrot powder biscuits diet (G6) and wheat flour biscuits diet (G3) which reached 3.7, 1.6 and 0.4 %, respectively. The results obtained that the group of rats fed on orange peels powder biscuits diet had higher decrease of serum total lipid, cholesterol, triglycerides, low density lipoproteins cholesterol (LDL-c), and atherogenic index. From the obtained results it could be revealed that using of orange peels powder, carrot powder and wheat bran as rich fiber sources with wheat flour (72 % extraction) for production of biscuits and cake at replacement level up to 20 % could be recommended from the stand point of economical and better health.

Keywords: wheat bran, orange peels powder, carrot powder, high fiber biscuits and cake

DEDICATION

I dedicate this work to whom I feel thanks my father, my late mother, my wife and parent's, my late grandmother, my late grandfather, my brothers and sister, for their lovely support offered along the period of my post graduation.

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