

(2)

Effect of High Fat Diets Containing Fish Oil, Flax Seeds and Chia Seeds on Rats Suffering from Osteoporosis

Ebtesam Fath M. Omar.¹ and Dalia Mohamed Talatt Abd EL-khalik.²

¹ (Home Economic Dept., Faculty of Specific Education, Alex. University)

² Home Economic Dept., Faculty of Specific Education, Fayoum University)

The New Egyptian J. of Medicine, Vol:50; (1) , 2014

ABSTRACT

This study aimed to investigate the effect of high fat diets HFDs containing fish oil, flax seeds and chia seeds on rats suffering from osteoporosis. Forty eight female Sprague-Dawley rats were divided into two main groups. The first main group (6 rats) fed on basal diet, as a control negative group. The second main group (42 rats) fed on HFD for 8 weeks to induce hyperlipidemia. After this period the second main group received oral prednisone acetate (4.5 ml/kg body weight/day twice a week) for two weeks to induce osteoporosis. Then, the second main group divided into seven subgroups (n= 6 rats) as follows: Subgroup (1) fed on HFD diet (control positive group). Subgroup (2 and 3) fed on HFDs containing 3% and 6% fish oil, respectively. Subgroup (4 and 5) fed on HFDs containing flaxseeds which provided the diets with 3% and 6% oils. Subgroup (6 and 7) fed on HFDs containing chia seeds which provided the diets with 3% and 6% oils. The results showed that, fish oil was the highest oil in saturated fatty acids. Fish oil and flax seeds oil were nearly similar in monounsaturated fatty acids. While, chia seeds oil was the highest oil in polyunsaturated fatty acids. All treated groups showed decrease in body weight gain%, especially the group which treated with chia seeds which provided with 6% oils. All tested diets improved the lipid profile, particularly, the high level from flax seeds which provided with 6% oils. The highest improvement in bone status recorded for the group treated with HFD containing 6% fish oil, followed by the group fed on HFD containing chia seeds which provided the diet with 6% oils. The highest decrease in serum glucose and homocysteine recorded for the group which was treated with HFD containing the high level of chia seeds, followed by the group which treated with the high

level of flax seeds, respectively. The HFDs containing fish oil, flax seeds and chia seeds improved the nutritional and biochemical parameters of hyperlipidemic rats suffering from osteoporosis.

Keywords: fish oil - flax seeds - chia seeds – rats - osteoporosis.