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تأثير البولي إيثيلين على التراكيب النسيجية للكبد في الفئران

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Abstract : Polyethylene is one of the polymers used in plastic synthesis. Previous studies indicated that polyethylene is an inert material. Recent reports about the possible hazardous effects of plastic sheets on the environment and on animal and plant lives. Several additives are added to polyethylene for several purposes. BHT (Butylated Hydroxy Toluene) is an antioxidant that is added to polyethylene to prevent oxidation. Several reports attributed the toxicological effects of polyethylene to the migration of additives from polyethylene to the surrounding environment. The aim of this thesis was to study the effect of polyethylene, with or without, BHT and the thermally-treated polyethylene on the liver of adult male mice. 105 mice were divided into groups. The 1st group (control group), the 2nd group (polyethylene group) the food given to this group was supplied with 20% of crushed polyethylene. The 3rd group (BHT group) the diet given to this group was supplied with 500mg/kg of BHT dissolved in corn oil. The 4th group (polyethylene and BHT group) the food given contained 20% of crushed polyethylene and 500mg/kg of BHT dissolved in corn oil. The 5th group (thermally treated polyethylene) the food given to this group was supplied with 20% of crushed thermally-treated polyethylene. The weight of the mice was recorded before the study and after 6 weeks. Blood samples were collected to determine the liver enzymes (GOT and GPT). The animals were sacrificed; the liver was weighed, and examined macroscopically. Liver specimens were stained and examined by light microscope. The results showed that the mean weight of the mice in polyethylene group, BHT group, and polyethylene and BHT group was statistically reduced in comparison to the control group. The liver weight in polyethylene group, BHT group, and polyethylene and BHT group was statistically increased in comparison to the control group. The histopathological examination of the liver specimens in polyethylene group revealed loss of lobular architecture with the appearance of deeply stained liver cells and atrophic nuclei (Apoptotic changes). GOT and GPT levels were statistically increased in comparison to the control group. The histopathological examination of the liver specimens in BHT group revealed congestion of the central and portal veins with destruction in the epithelial covering layer of the biliary canaliculi and portal veins. GOT and GPT levels were statistically increased in comparison to the control group. The histopathological examination of the liver specimens in polyethylene and BHT group revealed atrophy of the liver cells that appeared as small deeply stained cells with small atrophic nuclei with the appearance of liver fibrosis. GOT and GPT levels were statistically increased in comparison to the control group. The histopathological examination of the liver specimens in thermally-treated polyethylene group revealed loss of lobular architecture with severe congestion of portal veins and bile canaleculi and atrophy of the epithelial covering layer of these veins and canaliculi. GOT and GPT levels were statistically increased in comparison to the control group.

Supervisor : د. محمد بن إبراهيم مجلد .أ.د. علي بن أحمد الرباعي

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