

**Hepatic Fibrosis induced by High Cholesterol diet in Rats and
protective effects of Ellagic Acid:
Histological and Immunohistochemical Study**

**Thesis
Submitted for
fulfillment
of MD in Histology**

By
Sarwat Lotfi Ahmed Abdel-Latif
Assistant Lecturer of Histology
Faculty of Medicine, Fayoum University

Supervisors

Prof. Dr. Zakaria Abdel-Hamid Edris
Professor of Histology
Faculty of Medicine, Cairo University

Prof. Dr. Menna Mohamed Abdel-Dayem
Professor of Histology
Faculty of Medicine, Cairo University

Dr. Mohamed Salah Elgendy
Assistant Professor of Histology
Faculty of Medicine, Fayoum University

**Faculty of Medicine
Cairo University**

Summary and conclusion

The liver has an essential role in the metabolism of the compounds entering the body. It has a crucial role in detoxification. Chronic liver diseases are often complicated by hepatic fibrosis. One of the deleterious conditions capable of inducing hepatic fibrosis is long standing hypercholesterolemia. This work aimed at identifying the hepatoprotective effect of ellagic acid in liver fibrosis induced by hypercholesterolemia. Seventy two male albino rats were used in this study and were divided into:

Group I: *(control group) received the standard pellet diet only.*

Group II: *received standard pellet diet + 1% cholesterol.*

Group III: *received standard pellet diet + 1% cholesterol and intragastric injection of ellagic acid-solution.*

Group IV: *received standard pellet diet and intragastric injection of ellagic acid-solution.*

The examined liver of hypercholesterolemic rats showed foamy hepatocytes that appeared first at the periphery of the hepatic lobules and extended at 4 and 12 months to the rest of the lobules. By time more and more cells started to show ballooning. These changes were accompanied by vascular congestion with an increase of the collagen and microfibril content as the duration increased.

Statistical analysis

The statistical analysis of the obtained results concerning the distribution of area percent of α -SMA immunoreactive hepatic stellate cells revealed marked increase of these cells among the hepatocytes parallel to the increase in collagen deposition as shown in Masson's trichrome stained sections.

There was also a distinct increase of area and intensity of CD-11b immunoreactive

Kupffer cells in the hepatic sinusoidal walls.

Mast cells and the inflammatory rounded cells were demonstrated in huge amounts

in the portal tract areas as well as around the central hepatic veins.

Conclusion

The present study showed that ellagic acid had a protective effect on the liver cells and hepatic architecture in rats that were subjected to a hypercholesterolemic diet. Liver fibrosis was less developed when ellagic acid was added to the hypercholesterolemic diet during all stages of the experimental study.

Recommendations

- *Further experimental work aiming at the detection of the precise mechanisms behind the protective effects of ellagic acid through electron microscopic studies.*
- *More experimental studies involving other medicaments or combinations of herbal remedies to be used as protective or therapeutic agents in liver fibrosis.*