SUMMARY

The present investigation was carried out on 130 male albino rat Rattus norvegicus, which were divided into 13 groups, each of 10 animals. During feeding period of the experiment, each group was fed on a special diet containing a special oil for a period of 20-21 weeks. At the end of the experiment, the aniamls were sacrificed. Liver specimens were taken and processed till paraffrin and cryostat sections were obtained and stained for the light microscopic study. As well, ultrathin sections were prepared for the electron microscopy and the blood sera were collected , where the different serum measurements of the liver function tests were chemically estimated .

1. In the rats fed on fat-free diet different changes ranged from slight cloudy swollen to necrotic and atrophic changes were observed. Bile pigments were discerned intracellularly, in addition to the presence of lipogranuloma inbetween the hepatocytes.

A marked depletion of the glycogen, protein and nucleic acid contents were seen , with only a slight rise in the lipid content. By electron microscopy dilated and branched bile canaliculi, ruptured plasma membranes, giant mitochondria

and numerous myelinated bodies in the cytoplasm were recorded.

The biochemical study showed a significant increase in the total protein and the albumin serum levels, as well as a very high significant increase in the total lipid and triglyceride values.

2. In the rats fed on fresh cotton seed oil :

No significant pathological changes were observed, however, the hepatocytes were slightly swollen and contained few granules in their cytoplasm. Some inflammatory infiltrative reactions were observed at the portal areas.

A marked increase in the protein and lipid contents was observed in the hepatocytes .

The most important findings of E/M study were, the dilatation of the cisternae of the rough endoplasmic reticulum and the proliferation of the smooth ones with numerous lysosomes and giant mitochondria. The bile canaliculi were dilated. The Von. Kupffer cells were hypertrophied.

There was significant increase in the globulin and total lipid levels.

3. In the rats fed on fresh sunflower oil :

The hepatocytes that surrounded the central vein showed a cloudy swelling while these surro-

unded the portal area were vacuolated and possessed a lace-work cytoplasm.

Marked depletions in the protein, DNA and RNA containing particles were observed.

The E/M study showed degenerative changes in the cytoplasmic organelles including the rough endoplasmic reticulum, nuclei and the mitochondria. Numerous lysosomes, pinocytotic vesicles and proliferated cisternae of the smooth endoplasmic reticulum were recorded. The bile canaliculi were dilated.

A significant elevation of serum protein, albumin, globulin and total lipids. Were seen.

4. In the rats fed on fresh corn oil :

The hepatocytes were slightly swollen and containing some granules in the cytoplasm consequently, the blood sinusoids were collapsed.

Depletions in the protein, glycogen and nucleic acids contents were observed.

Most of the cytoplasmic organells were preserved while the palsma membrane was indistinct. The intercellular speces were widen and contained few organelles and numerous lysosomes. The cisternae of the endoplasmic reticulum were

dilated and contained amorphous material. Few bile canaliculi were having narrow lumina and less distinct microvilli. The Von Kupffer cells were hypertropheid and contained some rod-like crystals in addition to numerous lysosomes.

There was a significant increase in the cholestoral and triglyceride serum levels.

5. In the rats fed on fresh olive oil :

The central hepatocytes were slightly vacuolated and swallen, the mid-region ones were atrophied and the peripheral ones were swollen and contained numerous granules in their cytoplasm.

A marked decrease in the glycogen content was observed. The protein containing particles appeared to be slightly increased.

By E/M study; most of the cytoplasmic organelles were destroyed. A localized ruptured plasma membrane was observed and some bundles of reticular fibers were inserted in the intercellular space. The cisternae of both rough and smcoth endoplasmic reticula were fragmented and numerous lysosomes were observed. The nuclei showed numerous degenerative changes including the presence of wide nuclear pores, irregular nuclear envelope .

The serum triglycerides and cholesterol levels were elevated.

6. In the rats fed on fresh linseed oil :

Most cases of this group showed atrophic changes, while some cases showed an absence of the normal hepatic lobular pattern and appeared in a nut-meg pattern.

At the central parts of the hepatic lobules the hepatocytes suffered from cloudy swelling while peripherally they had a vacuolated cytoplasm and pyknotic nuclei.

An increase of the glycogen, lipid and nucleic acid contents was demonstrated.

Two forms of hepatic cells were seen ; the first possessed a packed cytoplasm and the other possessed a rarified cytoplasm.

The serum albumin was elevated.

7. In the rats fed on fresh rapeseed oil :

All types of degenerative changes ranging from cloudy swelling to complete fatty changes, were observed in this group. Severe inflammatory infiltrative collections of mono-and polymorphonuclear cells were observed at the portal area.

A slight decrease in the gylycogen content while a marked decrease in DNA were observed.

The serums GPT, total lipids, triglycerides and cholesterol were elevated.

10. In the rats fed on boiled corn oil :

Most of the cases simulated those fed on fresh cotton seed oil, while some cases showed the nut-meg pattern as in the case of the linseed oil fed rats.

The EM study showed a similar results to those fed on fresh cotton seed oil. In addition, amorphous material in the dilated cisternae of the endoplasmic reticulum was seen.

A marked decrease of GPT level was detected while the serum glcbulin, triglycerides and cholesterol were increased.

11. In the rats fed on boiled olive oil :

The histological changes were slightly simulated those fed on boiled cotton seed oil. There was an increase in the glycogen content but a slight decrease in the protein and also the lipids were slightly normal.

The E/M obsrvations were simillar to those fed on boiled cotton seed oil. However the cytoplasm was slightly rarified and some mitochondria were destroyed and numerous lysosomes were detected.

The serum SGPT, globulin, triglycerides and cholesterol were elevated.

12. In the rats fed on boiled rapeseed oil :

Most of the cases showed atrophic changes, except some ones which showed atrophic changes, and some ones which showed acidophilic cells at the portal areas. Numerous collections of inflammatory cells were observed in the differnt regions of the hepatic lobules .

Insignificant changes were observed in the glycogen and proteinic contents, while the lipids were concentrated at the portal area.

The E/M study showed the same changes as there fed on boiled cotton seed and corn oils, except the presence of inflammatory cells inbetween the hepatocytes at the portal area adjacent to the blood sinusoids.

The serum SGPT; total lipids, triglycerides and cholesterol were elevated.