

liver weights and liver to body weight ratios were significantly higher than controls (Fig. 2). The liver weight of control rats decreased during the period of anorexia, paralleling the decrease in body weight; when the rats started to feed both body and liver weights increased and the liver to body weight ratios followed the same pattern. Although the body weights of the NDFDA-treated rats decreased steadily and at a higher rate than the pair-fed controls, the liver weights decreased very little and remained near the original weight for 16 days. At 30 days after treatment the liver weights had increased until they were almost twice those of control rats. The result was a progressive increase in liver to body weight ratio over the 30-day period since there was no decrease in liver weights to match the decrease in body weights.

Thirty-two tissues were obtained for histological examination and significant changes were found in the thymus, testes, stomach, bone marrow, kidney, and liver samples. Both control and treated rats had inflamma-

tion, hyperkeratosis, edema, and some ulceration of the stomach probably resulting from starvation and stress and not distinctly exposure related. Although found in both control and treated rats, the lesions were more severe and prevalent in treated rats. The treated rats showed bone marrow hypocellularity at 16 days which apparently was reversible as bone marrow composition was normal at 30 days.

Thymic atrophy was seen in treated rats 8 days after exposure and thymic tissue was not found in the majority of treated rats at 12, 16, and 30 days. Atrophy and degeneration of the seminiferous tubules in the testes were first seen at 16 days after NDFDA injection and the degenerative changes were as severe after 30 days. Fatty changes in the proximal tubular epithelium of the kidneys were noted at 4, 8, 12, and 16 days in 50% of the treated rats and were interpreted as a manifestation of a mild reversible toxic insult (Fig. 3). There were several notable differences between control livers (Fig. 4) and livers from treated rats (Fig. 5). The most striking and consistent

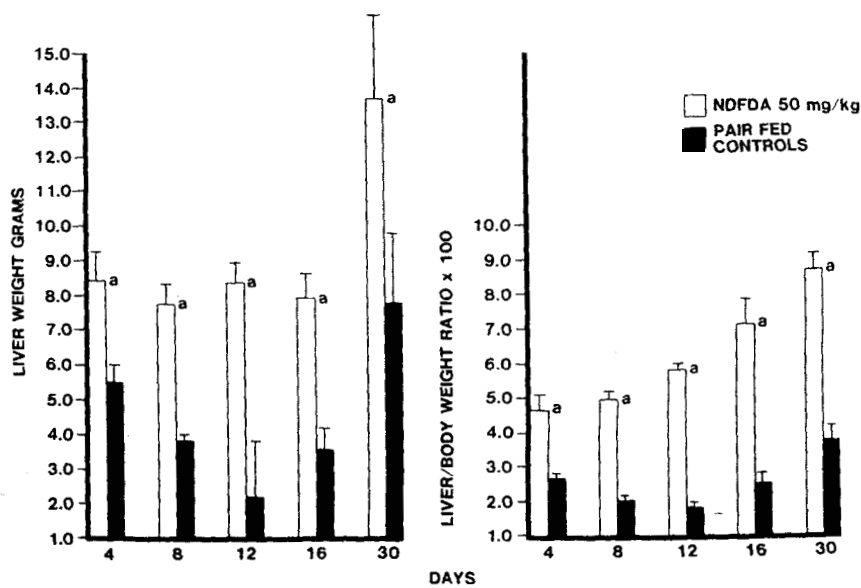


FIG. 2. Comparison of liver weights and liver to body weight ratios of male NDFDA-treated rats and pair-fed controls 4, 8, 12, 16, and 30 days after a single ip injection of 50 mg NDFDA/kg body wt or the vehicle. Data are shown as means \pm SD of six rats per group. ^aSignificantly higher than controls, $p < .01$.

FIG. 3. Kidney showing fatty

change was in the swelling of all time periods. Eosinophilic nuclei contained multiple nucleoli compressed and At a high magnification inflammatory cell necrosis was observed in treated rats at other times. Cellular swelling was also evident in the blood vessels of both sexes of both groups. Hemoglobin levels. Total serum protein and minimum weight increased to about