

Effect of experimentally induced diabetes mellitus on the exocrine part of pancreas of adult male albino rat and the possible protective role of Silymarin: light and electron microscopic study

Abstract:

Diabetes is a chronic metabolic disorder that remains a major worldwide health problem. The present study aimed to demonstrate the effect of experimentally induced diabetes on the exocrine part of pancreas and the possible protective effect of Silymarin. Forty adult male albino rats were randomly distributed into four groups (10 rats each). Group I and II (control groups), Group III (diabetic group): the rats received Streptozotocin intraperitoneally once in a dose of 55 mg/kg, and group IV (diabetic group were given Silymarin in a dose of 200mg /kg by oral gavage daily for four weeks). At the end of experimental time, the rats were sacrificed. The pancreas was excised and processed for histological (light and ultrastructural studies) and biochemical examination. Light microscopic examination of pancreatic sections of diabetic rats displayed loss of architecture of pancreatic acini, widening of spaces between acini, dilated interlobular duct, and congestion of blood vessels, excessive collagen fibers deposition around blood vessels and around interlobular ducts. Ultra-structurally, the pancreatic sections of diabetic rats showed little secretory granules, widely separated RER, irregular nuclear membrane and clumping of chromatin, fragmented mitochondria, rarefaction, and vacuolation of cytoplasm. Silymarin induction to diabetic rats led to normal architecture of some pancreatic acini but there are wide spaces between them, minimal collagen fibers deposition around acini and around blood vessels. Ultra-structurally there were euchromatic nuclei, many secretory granules. Few of the rough endoplasmic reticulum were widely separated. Biochemically GPx and

SOD levels in the pancreatic tissues of diabetic rats were significantly lower than the other groups. Treatment with Silymarin for four weeks led to restoration of GPx and SOD to normal level in the pancreatic tissues. The present study demonstrated the pathological effects of induced diabetes on the exocrine part of pancreas and that the use of Silymarin could ameliorate these effects.

