SUMMARY

The health consequences of cigarette smoking and of the use of other tobacco products are well known. They are an important cause of increased mortality and morbidity in developed countries and the prevalence is increasing in the developing world as well. The resulting of cigarette smoke is composed of a complex mixture of over 4,000 chemicals resulting from pyrolysis. Many of these chemicals exist in very small quantities just above the detection limits of sensitive toxicology assays, but many highly toxic chemicals are present in large measurable concentrations in tobacco smoke and are known to be involved in causing a variety of diseases.

In the present study, sixty fertile male and virgin female rats were used during experimentation. They were mated with average of 3: 1 females per each male respectively and zero date of gestation was determined.

1. Effects on maternal tissues: 1.1. Liver:

Administration of daily subcutaneous doses produced histological defects of hepatic tissues characterized by marked increase of dissolution of hepatic cords with prominent dilated blood sinusoids and ill defined cell boundaries of hepatocytes. Marked apparent hypertrophied kupffer cells, ballooning degeneration of hepatocytes with prominent vacuolated cytoplasm, apoptic cell death and focal collection of inflammatory cells in different regions of hepatic tissues were also noticed.
*Trifolium pratense* seed extract-treatment showed no signs of hepatotoxicity. Treatment of nicotine (either low and high dose) in combination with trifolium seed extract revealed marked amelioration of hepatic tissue.

1.2 Pancreas: Nicotine-treatment induced degeneration of endocrine cells associated with lacked normal orientation and structural pattern of pancreas at light microscopic level. Trifolium seed extract-treatment showed normal structural pattern similar to control. Combination treatment of nicotine and trifolium revealed marked amelioration of islet cells. Regenerated blood vessels at the periphery of the islets were detected.

At TEM level, low dose nicotine-treated group affected both light and dark β cells. The nuclei possessed irregular nuclear envelope and electron-dense chromatin material. The mitochondria appeared few and their inner compartment becomes vesicular. Some light β cells exhibited degenerated nuclear materials. Many other ones showed nuclei having convoluted nuclear envelope and enclosed by numerous electron-dense chromatin materials. The granular endoplasmic reticulum appeared either degenerated or release their covering ribosomes or become fragmented. Few numbers of secretary granules of varying sizes were detected throughout cytoplasm.

Experimental group recieved *Trifolium pratense seed* extract-treatment, the β cells appeared intact similar of the control.

Experimental group recieved low dose nicotine-treatment in combination with *Trifolium pratense* seed extract possessed almost normal cytological architecture of B cells. Few numbers of vacuoles were detected in-between the endocrine e cells. The cytoplasm of the cells exhibited increased intensity of secretory granules almost similar to the control.
1.3. Heart: In experimental low and high dose nicotine-treated groups, the myocardial muscle fibers showed irregular orientation pattern and become widely separated from each other. Focal necrotic zones with slight dense collection of inflammatory cells were detected. Many of the myocardial muscle fibers become eosinophilic with marked degeneration of their nuclei. Group received trifolium seed extract showed no signs of myocardial toxicity. Experimental group treated with either low or high dose-treatment in combination with oral doses of 1ml of Trifolium pratense seed extract revealed marked amelioration of myocardial tissue.

2. Histological observations on liver & heart of newly born:

2.1. Liver: Liver of newborn of maternally nicotine treated mothers with either low or high dose-treatment showed massive degeneration of hepatocytes associated with perivascular round cell infiltration, a marked congestion of the blood sinusoids, and vacuolar degeneration of most hepatic cells. Highest adverse effects were observed in those of high dose nicotine-treated mother. Newborn of mothers received Trifolium pratense seed extract revealed no signs of hepatotoxicity. Newborn of maternally-treated with either low or high dose of nicotine in combination with trifolium seed extract revealed marked ameliorating of hepatic tissue.

2.2. Heart:

The heart of newborn of maternally nicotine-treated mother showed massive degeneration of muscle fibers. Newborn of mothers received trifolium seed extract revealed normal structural pattern of myocardial muscle. Newborn of experimental group recieved nicotine-treatment in combination with trifolium seed extract ameliorated the histological picture of myocardial muscle fibers.