Preface
The development of modern technology has brought a dramatic increase in the production and consumption of chemicals. During the recent years, it has become increasingly evident that in large number of cases, human cancer may be linked to the environmental factors. Polycyclic aromatic hydrocarbons (PAHs) are the major group of environmental carcinogens known today. These compounds have their main source in the fossils fuel or produced during combustion of a high temperature reactions of organic materials. In an industrial society there are large number of stationary as well as mobile sources of PAHs. Furthermore, PAHs are subjected to considerable aerial transport. This makes them one of the most potential candidates for the environmental concern today. Experimental and occupational studies revealed that many PAH are known to possess carcinogenic and cocarcinogenic properties.

The general population receive carcinogenic insults from the environment, the drinking water and/or through additives or contaminants in the diet or the air all of them, we inhale, either alone or in combination, increases the carcinogenic risk. In the atmosphere, gaseous and particulate matter such as nitrousoxide, sulfur dioxide, industrial effluents, silicates asbestos, lead, nitroso compounds are present in large quantities. In the recent time, a number of very potent carcinogens of natural origin have been identified. This group
include aflatoxin, pyrrolizidine alkaloids, bracken fern and several other plant constituents. The aflatoxin are produced by only a few strains of *Aspergillus flavus* and *A. parasiticus*, a common and widely distributed food spoilage fungus. Fungi that live on rice, wheat, corn, peanuts and other storage grains causes several kinds of mycotoxicosis to humans and/or domestic animals when their metabolic products are ingested along with foodstuff.

The definition of cancer chemoprevention or anticancerogen is as the "use of non cytotoxic nutrients or pharmacological agents to enhance intrinsic physiological mechanisms that protect the organism against the development and progression of mutant clones of malignant cells".

Antimutagens was initially defined as "an agent that reduces the apparent field of spontaneous and/or induced mutation, regardless of the mechanism involved".

Mutagenic activities of certain nitroso compounds are diminished when these compounds are chemically reduced by vitamin C. Vitamin C inhibits formation of dimethyl nitrosamine from nitrite and secondary amines. It was also found that certain vegetable juices markedly inhibit the production of several potent mutagens, in the reaction between sorbic acid and sodium nitrite.

Epidemiological evidence indicates that the consumption of high amount of fruits, vegetables and moderate caloric intake offer a protective effect against a variety of cancers. The mechanism of the anticancerogenic influence of fruits and vegetables is not fully understood. Nevertheless, the components of fruits and vegetables, such as vitamin A, C, β-carotene, folic acid, etc. are well understood and may play a role in the anticancerogenic effects of fruits and vegetables.
Indole-3-carbinol (I3C), present in cruciferous vegetables as glucosinolates and is released after cellular disruption and enzymatic hydrolysis. I3C is reported to inhibit the covalent binding of benzo(a)pyrene (BaP) and dimethyl nitrosamine metabolites to cellular macromolecules in in vitro and in vivo systems. It also induces the in vitro demethylation of certain nitrosamines.

In this dissertation results of an investigation carried out on the antimitagenic and anticarcinogenic potential of I3C in murine cancer models are described. Attempts are also made to discuss its mechanism of inhibition of tumours.