Carcinogenicity of Cadmium Chloride Via Intraperitoneal Injection in albino Rats

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Date of acceptance 6/9/2006

Summary

In the present research, study was done on the carcinogenic effects of $CdCl_2$ which Injected I/P in albino male rats.

The study includes determine LD50 of $CdCl_2$ 40 in albino male rats 6 weeks of ages which randomly divided into 4 equal groups and one of them left as control group, other 3 group injected I/P with $CdCl_2$ at dose 30 mg/kg B.Wt. ,23 mg /kg B.Wt. and 20 mg/kg B.Wt. for 24 hrs, 48 and 96 hrs. The safe dose 10 mg/kg B.Wt. was used for I/P Injected to group chosen for which include 15 albino male rats and equal group used as control group, then the following parameters were studied :

1. Cytogenetic investigation : include Micronuclei MN and chromosomal aberration which shown to be significantly Increase and mostly as breaks in chromosomes.
2. Clinical signs: Vomation , bloody foamy cough , dyspnea and diarrhea in treated group were observed.
3. Histopathological changes: lungs of treated rats showed grossly masses embedded and /or raised upon lung.The masses diagnosed lately asadenocarcinoma which characterized by tubular or papullar form with acini formation which composed of columnar or cuboidal cells and vascularized connective tissue stalkes.Emphysema and coagulation were also observed.

Introduction

Cadmium is a naturally occurring metal that is used in various chemical forms in metallurgical and other industrial processes and in production of pigments .Environmental exposure can occur via the diet and drinking water (1). Cadmium is absorbed efficiently by the lungs (30 to 60 %) than by gastrointestinal tract , the latter being as a turable process(2).

Cadmium is transported in the blood and widely distributed in the body but accumulates primarily in the liver and kidneys(3).Inhalation exposure to Cadmium and Cadmium compounds may result in effects including headache, chest pain, muscular weakness, Pulmonary edema and death (4).

There is limited evidence from epidemiologic studies for Cadmium – related respiratory tract cancer and Cadmium is placed in weight of – evidence group BI- Probable human carcinogen (1).

Inhalation exposure to Cadmium dust , Fumes , aerosols and some Cadmium Compounds causes irritation of the respiratory tract , emphysema and death for acute exposure to high cadmium concentration (4).

Materials and Methods

1. Median lethal dose LD50 (5) :

40 white male rats six – weeks olds randomly divided equally into four groups ,1st group injected Intraperitoneal (I/P) with 30.0 mg/kg B.Wt. Cadmium Chloride CdCl2, 2nd

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