INTRODUCTION
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Rapid strides in the scientific and technical arenas has led to an increase in the number of different chemical substances and biological synthetic products in man’s environment. The use of chemicals has become imperative in the modern society. Chemicals are extensively employed today in various activities of our life. However, a few of these chemicals are known to possess harmful effects resulting in ill health. Increased incidence of genetic diseases, cancer and congenital anomalies observed in recent years can be attributed to the mutagenic, carcinogenic and teratogenic potential of these chemicals.

Chemicals can be classified into three major groups. They are

(a) Insecticides, herbicides and pesticides
(b) Metals
(c) Drugs and other chemicals (Sharma, 1984).

Since the advent of the twentieth century, medical therapy has achieved unprecedented progress. Drug research leading to the development of new drugs is in the hands of
highly sophisticated professionals and has become a competitive business. All drugs are toxic under certain circumstances, sometimes the undesirable side-effects take an upper hand, resulting in disasters. The occurrence of these disasters have forced the consumers exposed to insist on the public health authorities of various countries of the world to formulate guidelines and regulations. The subject of safety evaluation of drugs encompasses experimental and theoretical knowledge from several branches of biomedical sciences.

During the past 25 years, chemotherapy has gained an important role in the treatment of tumours. Plants are a suitable source for they provide chemicals with novel structures. So far, many plant products have been found to be active antitumour agents both in animal and human tumour systems (Hartwell, 1976). It has however been shown that certain antitumour agents possess the potential to induce chromosomal damage (Gebhart et al., 1980; Parkes and Scott, 1982).

Plumbagin (2-methyl-5-hydroxy, 1-4 naphthoquinone) the most abundant phytochemical present in the roots of Plumbago zeylanica is prescribed in the treatment of cancer
in Siddha system of medicine. It is known to possess antitumour, antibacterial, antifungal and antifertility activity (Purushothaman and Krishnaswamy, 1980). The clastogenic effect of this chemical has been studied with respect to both in vitro and in vivo systems (Santhiya, 1983). It has been subjected to rigorous chemical examination by workers (Sidhu and Sankaran, 1971). The present study aims to scrutinize the chemical with respect to its cytogenetic effects. Plumbagin was shown to be mutagenic in strain TA 2637 of Salmonella typhimurium (Tikkanen et al., 1983). The clastogenic effect of the drug was studied by using micronucleus assay (Ramani, 1989).

A number of short term screening procedures have been developed for mutagenicity testing. Each such test system has its own merits and demerits and hence none of the systems can be used independently as sole indicators of mutagenicity if accurate conclusions are to be made. Hence any cytogenetic study requires the use of a battery of tests. The cytogenetic parameters employed for such test systems are varied. However, chromozomal analysis though laborious is considered to be an ideal end point (Brogger, 1979; Wolf, 1982). Bone marrow of mice provide sufficient
number of cells to examine genotoxicity. The study of foetotoxic effect was followed to evaluate the transplacental effect in foetuses exposed to the drug.

The objectives of the present study can be enumerated as follows:

1. To evaluate the clastogenic effect of plumbagin on early, mid and late phases of cell cycle in mouse bone marrow.

2. To determine the action of plumbagin on the foetal chromosomes in mice treated during pregnancy.

3. To study the foetotoxic effects of plumbagin in terms of congenital and skeletal deformities.