SUMMARY AND CONCLUSION
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A wide array of environmental and industrial chemicals are capable of causing cytogenetic damage in humans are generally associated with clinical disorders, it is imperative to determine if human exposure to chemicals are capable of inducing this type of genetic damage. Various drugs used in the indigenous system of medicine in our country remain to be tested for their potential genotoxic effect.

The present study therefore is an attempt in this direction to assess the possible cytogenetic damage caused by plumbagin, an indigenous anticancer drug in an in vivo system.

The present investigation was carried out with following objectives:

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 on congenital and skeletal deformities.

The investigation was performed on a study group of

1. 60 animals weighing about 20 - 25 gms. This includes three different concentrations namely 3.75 mg, 7.50 mg, 15.0 mg/kg body weight of plumbagin with four durations such as 6, 12, 24 and 48 hrs. Control was maintained using 1% acetone as the solvent. The cytogenetic end points employed were chromosome aberrations and number of metaphases analysed were 100 metaphases/animal.

2. 6 treated and 6 control animals weighing from 28 - 42 gms during the gestation period. Plumbagin injected intraperitoneally at 3.75 mg/kg body weight on 6, 7, 8 day of pregnancy. 1% acetone was used as the solvent control. The cytogenetic end points employed were
chromosomal observations and number of metaphases analysed were 50 metaphases/animals.

3. 16 treated foetuses and 12 control foetuses were processed. The embryos processed were scanned for congenital and skeletal anomalies and also for morphological measurements.

The following observations were made:

1. The incidence of chromosome aberration in mouse bone marrow employed significant difference both at dose and duration level. Increase in concentration resulted in increased type of aberrations. Plumbagin showed dose-duration dependency and proves its clastogenic potential.

2. The frequency of chromosome aberration in foetal liver cells of mice treated during pregnancy indicates that plumbagin is found to be clastogenic at the concentration employed.

3. The foetotoxic effects indicated that the transplacental effect has been observed which
includes congenital and skeletal anomalies namely fusion of ribs (12 & 13) and overlapping of ribs in 5 treated embryos. Treated embryos are found to be significant and plumbagin is found to have mild teratogenic effect.

However, further studies should be attempted involving more animal species, more developmental periods and several concentrations of the drug before any conclusions can be drawn.