Summary and Conclusion

Antibiotics are Mediciens that control and eradicate the bacteria.

Ciprofloxacin is an antibiotic with abroad spectrum belongs to fluoroquinolone group with activity against gram negative and gram positive bacteria.

Ciprofloxacin is a very important antibiotic because it uses in the treatment of many infections.

Pelargonium graveolens is a natural green medical plant, available in every places, used as a source of geranium oil.

The aim of this study is to investigate the side effect of ciprofloxacin on both of chromosomes and DNA at different periods of time using classical methods of cytogenetics and molecular biology, in addition the protective role of pelargonium against ciprofloxacin effects was also examined.

In this study 180 male rats were used, 60 rats varying from 100-120 gm in weight and aged from 8-12 weeks were used in the cytogenetic studies. In the molecular studies 120 male rats were used; for tissue extraction 60 rats varying from 8-12 weeks in age. For the bone marrow experiments 60 rats varying from 30-40 gm in weight and from 2-4 weeks in age were used.

The experimental design for each 60 male rats was as follow:

The male rats were divided into four groups, each group consisted of 15 rats.

Group (1) 15 rats were served as control (Negative control).

Group (2) 15 rats were injected orally with ciprofloxacin (0.09 mg/gm of rats).

Group (3) 15 rats were injected orally with ciprofloxacin and drinked with aqueous extraction of pelargonium (0.2 mg/gm of rats) at different periods of time.

Group (4) 15 rats take pelargonium only (positive control) (0.2 mg/gm f rat).

Chromosomal aberrations:

The structure aberration only observed in this study, the highest percentage of structural chromosomal abnormalities observed in bone marrow cells of male rats were found clearly in the form of deletion, centromeric attenuation, end to end association and stickness while the chromatid fragments, breaks, gaps and chromosomal ring and centric fusion were lowest in the value of aberrations.

Pelargonium graveolens showed highly protective role so it reduced the value of aberrations of the protected rats at all periods of experimentations.

DNA damage (apoptosis and necrosis):

- Apoptosis and Necrosis observed in liver, spleen, lung and bone marrow after treatment with ciprofloxacin for 24hrs and that damage increased in liver and spleen while decreased in lung and bone marrow after 3 days and apoptosis decreased in all organs after 6 days.
- Apoptosis and Necrosis decreased in the protected animals than treated animals at different periods of time to be near to control especially after 6 days.