

# Fenvalerate-induced chromosome aberrations and sister chromatid exchanges in the bone marrow cells of mice in vivo

- [S Giri<sup>a,\\*</sup>](#),
- [G.D Sharma<sup>b,1</sup>](#),
- [A Giri<sup>a</sup>](#),
- [S.B Prasad<sup>c</sup>](#)

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[doi:10.1016/S1383-5718\(02\)00197-3](https://doi.org/10.1016/S1383-5718(02)00197-3)

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## Abstract

Fenvalerate, a synthetic pyrethroid insecticide, is commonly used in agriculture and other domestic applications due to its high insecticidal activity and low mammalian-, avian- and phyto-toxicities. However, the genotoxic effect of fenvalerate is highly equivocal. In the present study the genotoxic effects of fenvalerate was evaluated using structural chromosome aberration (CA) and sister chromatid exchange (SCE) assays in mice. Out of the three doses (5, 10 and 20 mg/kg) tested, statistically significant increase in CA was found following intra peritoneal (i.p.) treatment of 20 mg/kg of fenvalerate for 24 h ( $P<0.01$ ) and 48 h ( $P<0.05$ ) only. Neither the acute doses of 5 and 10 mg/kg, nor the sub-acute dose ( $5 \times 4 \text{ mg/kg}$ ) of fenvalerate could induce any significant effect. All the three acute doses induced significant increase in the frequency of SCEs ( $P<0.01$ ) in the bone marrow cells, which showed a significant dose-response correlation ( $r=0.9541$ ,  $P<0.05$ ). With certain reservations to possible impurities, from the present findings technical grade fenvalerate may be considered as a weak clastogen and a potent inducer of SCEs in mice.

## Keywords

- Fenvalerate;
- Synthetic pyrethroid insecticide;
- Chromosome aberration;
- Sister chromatid exchange;
- Replication index;
- Genotoxicity

Corresponding author.

[1](#)

Present address: Nagaland University, Lumami, Kohima 797001, India.