



Invitro Toxicity of Pendimethalin using Ciliate Protozoa *Paramecium caudatum* and *Blepharisma intermedium*

Nageswara Rao Amanchi and G. Archana

Osmania University, Hyderabad, Telangana-500 007, India
E-mail: bowmibannu@gmail.com

Abstract: The herbicide pendimethalin was tested for its ability to induce cytological, physiological and genotoxic changes in selected ciliates *Paramecium caudatum* and *Blepharisma intermedium*. Different concentrations of pendimethalin were administered to both the test organisms in acute toxicity studies for 3 hours and threshold. LC_{50} and LC_{100} values were derived using probit analysis. The calculated LC_{50} were to be 15ppm and 34.67 ppm for *P. caudatum* and *B. intermedium*, respectively. The selected sub lethal concentrations of pendimethalin to *Paramecium* (2, 3, 4 and 5 ppm) and *Blepharisma* (4, 6, 8 and 10 ppm) induced significant decrease in contractile vacuole and food vacuole activity with that of controls which is concentration dependent. The changes in shape, size and structure of macronucleus were noticed in both the test organisms under pesticide stress. Rod shaped, vacuolated, fragmented, uneven division and karyolysis were the different changes observed in the macronucleus. The bioassay experiments revealed that the *P. caudatum* is more sensitive than the *B. intermedium* and could be used as complementary model in assessing cytotoxic potential of pendimethalin in invitro studies.

Keywords: Pendimethalin, Ciliate protozoa, Acute toxicity studies, Pesticide stress
