B9

Genotoxic Evaluation of *Gyllus bimaculatus* in 3 Sets of Mutagenicity Tests

Mi Young Ahn*, Hye Jin Bae[1], Byung Mu Lee[1], Kang Sun Ryu, Iksoo Kim and Jin Won Kim

Department of Sericulture and Entomology, NIAST, RDA, Suwon 441-100, Korea

[1]Division of Toxicology, School of Pharmacy, Sung Kyun Kwan University, Suwon 440-746, South Korea

Objectivies

Cricket *(Gyllus bimacutus)* is mass-bred in 6 time cycles per one year in insect farms. They are used as dry or live foods for animals, tropical fish, reptile and amphibians. Therefore, it is necessary to study the genotoxicity of whole bodies of *G. bimaculatus*. The aim of this present study was to evaluate the genotoxicity of the *G. bimaculatus* extract with three methods, Ames test, chromosome aberration test in Chinese hamster ovary cells in vitro and micronucleus (MN) test in vivo which involve the different test systems (bacteria, mammalian cells and mice nuclei).

Materials and Methods

1. **Materials** : *G. bimaculatus* were supplied at a insect farm in Chungju, Korea
2. **Methods** :

The mutagenic potential of *Gryllus bimaculatus* was evaluated using the short-term genotoxicity tests including Ames, chromosome aberration and micronuclei tests. Ames test was performed essentially according to the procedure described by Maron and Ames. Four *Salmonella typhimurium* strains TA98, TA100, TA102 and TA1537 courtesy professor B.N. Ames, University of California, Berkeley, were used.

For chromosome aberration test, CHO (Chinese hamster ovary) Cultures were initiated by seeding approximately 1×10^4 cells per 24 well into 1 ml of medium. For both assays (initial and confirmatory) without metabolic activation, 1 day after culture initiation, the cells were incubated at approximately 37 °C. with the test article, vehicle control (water and DMSO) and positive control (mitomycin C) at predetermined a concentrations for 24 h. For trials conducted with metabolic activation, S9 was added for the incubation 24h period and a benzo(a)pyrene was used positive control.

For micronucleus test, young adult male mice of the ICR strain were acclimated for at least 7 days before being placed on study. Test articles were dissolved in distilled water, which also served as vehicle control. *G. bimaculatus* suspension was treated by i.p. 0.1 ml/10 g body wt at doses of 0 (control), 15, 30,150, 300 and 1500 mg/kg to groups scheduled for the 24-harvest time point.

Results.

In *salmonella typhimurium* assay, *G. bimaculatus* did not show any mutagenic response in the absence or presence of S9 mix with TA98, TA100, TA1535, and TA1537. In chromosome aberration test, *G.*

bimaculatus did not show any significant effect on Chinese Hamster Ovary (CHO) cells compared with control. In mouse micronucleus test, no significant increase in occurrence of micronucleated polychromatic erythrocytes was observed in ICR male mice intraperitonealy administered with *G. bimaculatus* at a dose of 15, 150 and 1500 mg/kg. These results indicate that *G. bimaculatus* has no mutagenic potential in these *in vitro* and *in vivo* systems.

References

Maron, D. M. and Ames, B. M. 1983. Revised methods for the Salmonella mutagenicity test. *Mutation Res.* 113:173-215