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Comparisons of Karyotypes between GM and Non-GM Plants in Chili Pepper and Rice

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Various genetically modified plants have been developed among main crops including pepper, rice, Chinese cabbage etc., and confirmation on the genetic stability of these transgenic GM plants is essential in breeding of the crops. Karyotypes of transgenic GM plants were compared with those of non-GM plants in chili pepper, *Capsicum annuum* and rice, *Oryza sativa* using mitotic metaphase chromosomes and FISH patterns of 5S and 45S rDNAs. The introduced genes in GM plants are *CMVP0-CP* in chili pepper and *cry1Ac* or *LS28* in rice respectively. The somatic chromosome compositions of GM and non-GM plants in chili pepper and rice were all diploids of $2n=24$ and no significant difference in mitotic karyotypes and FISH patterns considering chromosome length, type, satellites, 5S and 45S rDNA locations etc., was observed between non-GM and transgenic GM plants.

Key words: GM, non-GM, chili pepper, rice, karyotype, FISH patterns, 45S and 5S rDNA

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Effects of Exposure Period on the Developmental Toxicity of 2-Bromopropane in Sprague-Dawley Rats

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We have recently reported that 2-bromopropane (2-BP) demonstrates maternal toxicity, embryotoxicity, and teratogenicity in Sprague-Dawley rats. The aims of this study are to examine the potential effects of 2-BP administration on pregnant dams and embryo-fetal development, and to investigate the effects of metabolic activation induced by phenobarbital (PB) on developmental toxicities of 2-BP. Pregnant rats received 1000 mg/kg/day subcutaneous 2-BP injections on gestational days (GD) 6 through 10 (Group II and Group III) or 11 through 15 (Group IV). Pregnant rats in Group III received an intraperitoneal PB injection once daily at 80 mg/kg/day on GD 3 through 5 for induction of the liver metabolic enzyme system. Control rats received vehicle injections only on GD 6 through 15. All dams underwent caesarean sections on GD 20 and their fetuses were examined for external, visceral, and skeletal abnormalities. Significant adverse effects on pregnant dams and embryo-fetal development were observed in all the treatment groups, and the maternal and embryo-fetal effects of 2-BP observed in Group II were higher than those seen in Group IV. Conversely, maternal and embryo-fetal developmental toxicities observed in Group III were comparable to those seen in Group II. These results suggest that the potential effects of 2-BP on pregnant dams and embryo-fetal development are more likely in the first half of organogenesis (days 6-10 of pregnancy) than in the second half and that the metabolic activation induced by PB pre-treatment did not modify the developmental toxic effects of 2-BP in rats.

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Key Words: 2-Bromopropane; Embryotoxicity; Teratogenicity; Susceptible period; Metabolic activation; Rats.