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INDUCTION OF APOPTOSIS IN TESTIS OF SD RATS AFTER EXPOSURE 2-BROMOPROPANE

Young-Hee Kim[1], Sung-Whan Cho[2], Chang-Su Ha[1], Boo-Hyon Kang[1]
[1]Toxicology Research Center (TRC), Korea Research Institute of Chemical Technology, 100 Jang-dong, Yuseong-gu, Daejon, 305-600, Korea
[2]Chungnam National University, 220 Gung-dong, Yuseong-gu, Daejon, 305-764, Korea

Exposure of testis to 2-BP is known to cause degeneration of male germ cells. However, the mechanism underlying this process is poorly understood. The objective of this study was to determine whether 2-BP induces apoptosis during onset of toxicity in germ cells of male Sprague-Dawley rats. Male SD Rats (N=3 or 4 in each group) were orally administered either with the corn oil vehicle or with 2-BP(3,500 mg/kg) dissolved in corn oil (10 ml/kg body weight) once daily for 3 days. The animals were terminated with ether at 4, 8, 12, 24, and 48 hours after the last administration. Approximately, 0.5 gm of one testis from each animal was cryo-preserved for electrophoresis. The other testis was fixed in Bouin"s solution for H-E stain, PAS stain and terminal deoxynucleotidyl transferase mediated dUTP nick end labeling (TUNEL) detection. The presence of apoptosis was determined by TUNEL detection *in situ* and by an increase in DNA fragmentation (DNA ladder).

A low incidence of spontaneous apoptosis was observed in vehicle control animals, particularly in pre-meiotic germ cells observed at I-VI and XII-XIV developmental stages in the seminiferous tubules. In 2-BP exposed rats, the incidence of apoptosis increased progressively at 4h, reached a peak at 8h(about 7-foil ablve control), and then decreased rapidly to control levels by 48h after the last administration. Although apoptosis induced by 2-BP occurred in all stages of germ cells, it was most pronounced in spermatogonia and spermatocytes in I-VI and XII-XIV stages. Based on the results of the current study, it was concluded that apoptosis is associated with initial 2-BP toxicity on testicular germ cells.