OSHRI

Occupational Safety and Health Research Institute

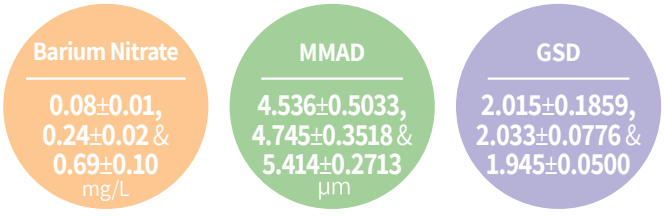
28-day (subacute) Inhalation Toxicity of Barium Nitrate in F344 Rats

Methods

Five male and five female F344 rats were exposed to barium nitrate for 4-weeks (6 h/day, 5 days/week) at concentration of 0, 0.08, 0.25, and 0.70 mg/L. The exposure of test substance was carried out in nose-only chambers and animal housing was carried out in polysulfone cages. The range of environmental conditions was maintained in accordance with the test guidelines. Clinical sings, body weight changes, hematology, blood biochemistry, organ weights, and histopathological findings were observed.

Results

The test substance concentrations in the chambers were 0.08 ± 0.01, 0.24 ± 0.02, and 0.69 ± 0.10 mg/L. The MMAD were 4.536 ± 0.5033, 4.745 ± 0.3518, and 5.414 ± 0.2713 μm and the GSD were 2.015 ± 0.1859, 2.033 ± 0.0776, and 1.945 ± 0.0500. During the exposure period, one death and one moribund rat were found in middle dose group (0.25 mg/L) and high dose group (0.70 mg/L) in male rats. And one death in middle dose group (0.25 mg/L) and four deaths or moribund rats in high dose group (0.70 mg/L) were found in female rats. Rough fur and lying on side were observed in high dose group (0.70 mg/L) in male rats. And clinical signs including decrease in locomotor, weakening, and rough fur were observed in high dose group (0.70 mg/L) in female rats. Decreased body weight changes were observed in high dose group (0.70 mg/L) in male rats, and decreased food consumptions were temporarily observed in female rats. No substance-related changes were observed in organ weights. Monocytes ratio (MON%) and inorganic phosphorus (IP) were increased in high dose group (0.70 mg/L) in male rats, and creatinine (CREA) was decreased in middle dose group (0.25 mg/L) in female rats. The changes in the larynx, heart, liver, kidneys, nasal cavity, and lungs were substance-related in all the exposure groups (0.08, 0.25, and 0.70 mg/L) in male and female rats.



Conclusion

Based on the findings, the no-observed-adverse-effect concentration (NOAEC) was determined to be less than 0.08 mg/L in F344 rats.

Laboratory

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