Ōyō Yakuri (1978) **15** (3) 433~436 (Special Publication)

Acute Toxicity of Monosodium L-Glutamate in Mice and Rats

Hirofumi Moriyuki and Masamichi Ichimura*

(*Life Science Laboratory Central Research Laboratories Ajinomoto Co., Inc.
Maeda-cho, Totsuka-ku, Yokohama-214)

Acute toxicities of monosodium L-glutamate in male and female mice and rats were studies by oral (p.o.), subcutaneous (s.c.), intraperitoneal (i.p.) and intravenous (i.v.) routes. LD_{50} values (g/kg body weight) by respective routes represented by male and female order were as follows : Mice, (p.o.) 17.7 and 16.4, (s.c.) 8.20 and 8.40, (i.p.) 6.57 and 5.70, and (i.v.) 3.70 and 3.30; Rats, (p.o.) 17.3 and 15.8, (s.c.) 8.20 and 8.40, (i.p.) 5.70 and 4.80, and (i.v.) 3.30 and 3.30. LD_{50} values mainly depended upon the routes of administration. Generally toxic signs were similar irrespective of sex and species: depressive states were observed in lower desages and excited signs in higher dosages.

Key words: Monosodium L-Glutamate, Acute toxicity (mice and rats)

Introduction

Although some LD_{50} values of monosodium L-glutamate (MSG) have been reported in mice (Pinto-Scognamiglio *et al*, 1972; Yanagisawa *et al*, 1961), rats (Pinto-Scognamiglio *et al*, 1972; Klingmuller *et al*, 1955) and chicks (Carew *et al*, 1971), no information is available about acute toxicity investigated comparatively by various routes of administration. However, as a basis of safety evaluation, comparative study of acute toxicity by various routes of administration is very important.

The present study was conducted to examine acute toxicity of MSG by oral (p.o.), subcutaneous (s.c.), intraperitoneal (i.p.) and intravenous (i.v.) administration in male and female mice and rats.

Materials and methods

MSG Which was commercially available as a food additive was used in this experiment. Male and female 4-week-old mice of ICR strain, weighing 18 to 23 g, and male and female Sprague Dawley rats of 5 weeks of age, weighing 90 to 130 g, were employed. All animals were fed a commercial diet and given water *ad libitum* throughout the experiment unless otherwise mentioned. Animals were kept in an air-conditioned room where temperature and humidity were regulated at $23\pm1°$ and $50\pm10\%$, respectively.

In case of (p.o.) administration alone, each animal was deprived of food for 8 hours prior to dosing. The test substance was given as an aqueous solution for (p.o.) administration or as a physiological saline solution for the other routes of administration.

The concentrations of the test compound in a solution were adjusted to be a constant dosage volume for each route of administration; 40 m*l*/kg body weight for (p.o.), (s.c.) and (i.p.), and 20 m*l*/kg body weight for (i.v.). Control animals were given the same volume of the vehicle only. Mice and rats were housed 10 and 5 animals per cage, respectively, immediately after dosing. Numbers of deaths and toxic signs were observed for 2 weeks. LD_{50} values with 95% confidence limits in 14 days were calculated by the method of Litchfield and Wilcoxon (1949).

Results and discussion

LD_{50} values with 95% confidence limits and rela-

* 横浜市戸塚区前田町 214 (〒 244) 味の素株式会社生物科学研究所, 森雪弘文, 市村正道