

## **<sup>125</sup>I-iomazenil binding shows stress- and/or diazepam-induced reductions in mouse brain: Supporting data for <sup>123</sup>I-iomazenil SPECT study of anxiety disorders**

Makoto TAKAHASHI,\* Ikuo ODANO,\*\* Shozo FUJITA\*\*\* and Masaki OHKUBO\*\*\*

\*Department of Psychiatry, Niigata University School of Medicine

\*\*Department of Radiology, Niigata University School of Medicine

\*\*\*Department of Radiological Technology, College of Biomedical Technology, Niigata University

Effects of repeated swim stress on the binding of <sup>125</sup>I-iomazenil were examined in the brains of diazepam-treated and non-treated mice. The mice were orally administered diazepam or vehicle (0.5% ethylene glycol) and subjected to daily swim stress (at 20°C for 10 min) for seven consecutive days. The distribution and the amount of <sup>125</sup>I-iomazenil binding were analyzed autoradiographically after *in vivo* and *in vitro* binding experiments. Repeated swim stress decreased the *in vivo* binding in the hippocampus ( $p < 0.05$ ) and cerebral cortex ( $p < 0.05$ ) of vehicle-treated mice but caused no significant changes in diazepam-treated mice. Subchronic treatment with diazepam decreased the *in vivo* binding approximately 50% in all brain regions examined ( $p < 0.01$ ). The *in vitro* experiment, however, revealed no significant changes except in the hippocampus, where a small but significant decrease in the binding was observed after subchronic treatment with diazepam ( $p < 0.01$ ). The stress- or diazepam-induced reductions seem to represent alterations in the *in vivo* environment related to <sup>125</sup>I-iomazenil binding. These results suggest that we can investigate the pathophysiology of stress and anxiety with <sup>123</sup>I-iomazenil SPECT. Care must be taken concerning the effects of benzodiazepines.

**Key words:** iodine-125-iomazenil; benzodiazepine receptor; repeated swim stress; diazepam; autoradiography