

Data from the 1960s and 1970s demonstrate that monosodium glutamate causes hypothalamic damage, endocrine disruption, and behavior disorders when given to immature animals after either subcutaneous (59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81) or oral (67,73,74,76,82,83,84,85,86) doses.

59. Olney, J.W. Brain lesions, obesity, and other disturbances in mice treated with monosodium glutamate. Science164: 719-721, 1969.
60. Olney, J.W. Ho, O.L., and Rhee, V. Cytotoxic effects of acidic and sulphur containing amino acids on the infant mouse central nervous system. Exp Brain Res 14: 61-76, 1971.
61. Olney, J.W., and Sharpe, L.G. Brain lesions in an infant rhesus monkey treated with monosodium glutamate. Science166: 386-388, 1969.
62. Snapir, N., Robinzon, B., and Perek, M. Brain damage in the male domestic fowl treated with monosodium glutamate.Poult Sci 50: 1511-1514, 1971.
63. Perez, V.J. and Olney, J.W. Accumulation of glutamic acid in the arcuate nucleus of the hypothalamus of the infant mouse following subcutaneous administration of monosodium glutamate. J Neurochem 19: 1777-1782, 1972.
64. Arees, E.A., and Mayer, J. Monosodium glutamate-induced brain lesions: electron microscopic examination. Science 170: 549-550, 1970.
65. Arees, E.A., and Mayer, J. Monosodium glutamate-induced brain lesions in mice. Presented at the 47th Annual Meeting of American Association of Neuropathologists, Puerto Rico, June 25-27, 1971. J Neuropath Exp Neurol 31: 181, 1972. (Abstract)
66. Everly, J.L. Light microscopy examination of monosodium glutamate induced lesions in the brain of fetal and neonatal rats. Anat Rec 169: 312, 1971.
67. Olney, J.W. Glutamate-induced neuronal necrosis in the infant mouse hypothalamus. J Neuropathol Exp Neurol 30: 75-90, 1971.
68. Lamperti, A., and Blaha, G. The effects of neonatally-administered monosodium glutamate on the reproductive system of adult hamsters. Biol Reprod 14: 362-369, 1976.
69. Takasaki, Y. Studies on brain lesion by administration of monosodium L-glutamate to mice. I. Brain lesions in infant mice caused by administration of monosodium L-glutamate. Toxicology9: 293-305, 1978.
70. Holzwarth-McBride, M.A., Hurst, E.M., and Knigge, K.M. Monosodium glutamate induced lesions of the arcuate nucleus. I. Endocrine deficiency and ultrastructure of the median eminence. Anat Rec 186: 185-196, 1976.

71. Holzwarth-McBride, M.A., Sladek, J.R., and Knigge, K.M. Monosodium glutamate induced lesions of the arcuate nucleus. II Fluorescence histochemistry of catecholamines. Anat Rec 186: 197-205, 1976.
72. Paull, W.K., and Lechan, R. The median eminence of mice with a MSG induced arcuate lesion. Anat Rec 180: 436, 1974.
73. Burde, R.M., Schainker, B., and Kayes, J. Acute effect of oral and subcutaneous administration of monosodium glutamate on the arcuate nucleus of the hypothalamus in mice and rats. Nature(Lond) 233: 58-60, 1971.
74. Olney, J.W. Sharpe, L.G., Feigin, R.D. Glutamate-induced brain damage in infant primates. J Neuropathol Exp Neurol 31: 464-488, 1972.
75. Abraham, R., Dougherty, W., Goldberg, L., and Coulston, F. The response of the hypothalamus to high doses of monosodium glutamate in mice and monkeys: cytochemistry and ultrastructural study of lysosomal changes. Exp Mol Pathol 15: 43-60, 1971.
76. Burde, R.M., Schainker, B., and Kayes, J. Monosodium glutamate: necrosis of hypothalamic neurons in infant rats and mice following either oral or subcutaneous administration. J Neuropathol Exp Neurol 31: 181, 1972.
77. Robinzon, B., Snapir, N., and Perek, M. Age dependent sensitivity to monosodium glutamate inducing brain damage in the chicken. Poult Sci 53: 1539-1942, 1974.
78. Tafelski, T.J. Effects of monosodium glutamate on the neuroendocrine axis of the hamster. Anat Rec 184: 543-544, 1976.
79. Coulston, F. In: Report of NAS,NRC, Food Protection Subcommittee on Monosodium Glutamate. July, 1970. pp 24-25.
80. Inouye, M. and Murakami, U. Brain lesions and obesity in mouse offspring caused by maternal administration of monosodium glutamate during pregnancy. Congenital Anomalies 14: 77-83, 1974.
81. Olney, J.W., Rhee, V. and DeGubareff, T. Neurotoxic effects of glutamate on mouse area postrema. Brain Research 120: 151-157, 1977.
82. Olney, J.W., Ho, O.L. Brain damage in infant mice following oral intake of glutamate, aspartate or cystine. Nature(Lond) 227: 609-611, 1970.
83. Lemkey-Johnston, N., and Reynolds, W.A. Incidence and extent of brain lesions in mice following ingestion of monosodium glutamate (MSG). Anat Rec 172: 354, 1972.
84. Takasaki, Y. Protective effect of mono- and disaccharides on glutamate-induced brain damage in mice. Toxicol Lett4: 205-210, 1979.

85. Takasaki, Y. Protective effect of arginine, leucine, and preinjection of insulin on glutamate neurotoxicity in mice. Toxicol Lett 5: 39-44, 1980.

86. Lemkey-Johnston, N., and Reynolds, W.A. Nature and extent of brain lesions in mice related to ingestion of monosodium glutamate: a light and electron microscope study. J Neuropath Exp Neurol 33: 74-97, 1974.