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Differential expression of NADPH-diaphorase in hypothalamic areas of obese Zucker rats

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Nitric oxide (NO) is synthesized by nitric oxide synthase (NOS), and it is thought that NO may play an important role in the mechanism of food intake control. Several studies have suggested that the activity of NOS may be involved in the regulation of food intake in the genetically obese Zucker rats. In the present study, we investigated the anatomical distribution and activity of NOS neurons in the hypothalamus of obese and lean Zucker rats. Obese Zucker rats showed significantly lower staining intensities of NADPH-diaphorase-positive neurons in the paraventricular nucleus (PVN), lateral hypothalamic area (LHA) and ventromedial hypothalamic nucleus (VMH) than lean Zucker rats did. The differences in staining intensities between obese and lean Zucker rats were large in both PVN and LHA, but such differences were relatively small in the VMH.