

**Z501 Effects of Smoking on the Catecholaminergic Neurons
in the Rat Brain**

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Nicotine is a toxic substance that is absorbed by smoking. However, the effect of nicotine itself on the central nervous system has not been elucidated yet. We studied the effect of smoking (3times×30min×500ml/day, 4weeks, n=5) on immunoreactivity for tyrosine hydroxylase (TH), the rat-limiting enzyme of catecholamine synthesis, in the rat brain including the cerebral cortex, striatum, hypothalamus, and ventral tegmental area to investigate the influence of smoking on catecholaminergic neurons. Both the number and intensity of TH-immunoreactive fibers and cells of the smoking group increased in several brain areas were compared with those of the control group. We suggest that nicotine-administration influences catecholaminergic neural systems, and that these effects might be related to smoking addiction. Moreover, we will study the effects of smoking on dopamine receptors and new genes.

**Z502 Seasonal Changes in Gonadotropin Releasing Hormone
(GnRH) levels in bullfrog brain**

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Experiments were carried out to ascertain whether the amounts of mammalian GnRH in brain change during different seasons using bullfrog (*Rana catesbeiana*) brain. The amounts of mGnRH in brain were measured by radioimmunoassay. Although the level of mGnRH exhibit big variations among individual animals, the average level of mGnRH in frog brain obtained in breeding season was much higher (six-fold) than that obtained in hibernation period. The amounts of mGnRH in frog brain obtained in winter were very low and the levels increased markedly from March until September, when the levels decreased again. The level of mGnRH in mid-brain was higher than that observed in fore- or hind-brain. The data presented here demonstrate that the amount of mGnRH in frog brain is much higher in active period than in hibernation period.