Central administration of Ang II and vasotocin, and changes in body fluid stimulate c-fos expression in the treefrog brain

Sho Maejima, Norifumi Konno, Kouhei Matsuda and Minoru Uchiyama

Laboratory of Regulatory Biology, Graduate School of Science and Engineering, University of Toyama, Japan.

Anuran amphibians do not drink orally but absorb water osmotically across high permeable ventral skin. Recently, we demonstrated that central administration of angiotensin II (Ang II) and vasotocin (AVT) facilitates water intake behavior in the Japanese treefrog, *Hyla japonica*. In the present study, we investigated the effect of ICV injected Ang II and AVT on the expression of c-fos protein in the brain by immunohistochemical technique. Additionally, influence of body fluid changes (body fluid volume and plasma osmolality) was examined similarly. Central injection of Ang II increased number of c-fos immunoreactive cells in the area around anterior commissure (AC area), preoptic area (Poa) and dorsomedial hypothalamic nucleus (DMH). Administration of AVT only induced c-fos protein expression in the cell of Poa. Dehydration induced c-fos protein expression in AC area, Poa and DMH. On the other hand, increase in body fluid or decrease in plasma osmolality did not stimulate on c-fos expression. These results indicates that Ang II, AVT and changes in body fluid activate neural activity in AC area, Poa and DMH, and suggests that these areas play an important role in the regulation of body fluid balance in the treefrog.