

## Histamine H1 receptor on neurons and astrocytes plays different roles in mouse behavior

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Histamine acts as a neurotransmitter in the brain and controls diverse brain functions. Recently, we elucidated the important roles of histamine H1 receptors (H1R) on intracellular signaling in 1321N1 cells, an astrocytoma-derived cell line. However, it was still unknown the impact of astrocytic H1R on brain functions. In the present study, we deleted mouse H1R gene from astrocytes and neurons and analyzed the phenotype of astrocyte- and neuron-specific conditional knockout mice (cKO). First, we confirmed that cell-specific reduction of H1R gene expression in cKO mice. Behavioral studies revealed that H1R on both astrocytes and neurons played an important role of anxiety-like behavior. Neuronal H1R was also involved in recognition memory. Astrocytic H1R contributed to the regulation of aggressive behavior, circadian rhythms and quality of wakefulness. In conclusion, our study stresses the importance of H1R on neurons and astrocytes in distinct physiological processes.