1-O-B2-1 Oral Sessions

Histamine activation of periaqueductal grey matter and somatosensory cortex exerts an antinociceptive effect in mechanical allodynia.

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Histamine is a bioactive amine which is involved in diverse physiological functions including allergic reaction and gastric acid secretion. In the central nervous system (CNS), histamine acts as a neurotransmitter to control various brain functions such as sleep-wake cycle. Recent studies have shown the therapeutic action of central histamine on mechanical allodynia. However, the mechanism(s) by which histamine attenuates allodynia remain unknown. First, we investigated responsible histamine receptors for histamine-induced pain relief. Pharmacological assays showed that the activation of postsynaptic histamine H1 and H2 receptors were important for pain relief. Next, we examined which brain regions were important for pain alleviation by histamine. We decreased the function of histamine system in several brain regions by adeno-associated viruses and revealed that periaqueductal gray matter (PAG) and somatosensory cortex (SS) were involved in histamine-induced pain relief. Histaminergic activation by DREADDs (designer receptors exclusively activated by designer drugs) also confirmed the importance of PAG for pain relief by histamine.

These data demonstrates that histamine activation in PAG and SS has antinociceptive effects on mechanical allodynia.