Histamine N-methyltransferase is important for the normal sleep-wake cycles and aggression through the regulation of brain histamine concentration. Fumito Naganuma, Takeo Yoshikawa, Tadahiro Nakamura and Kazuhiro Yanai.

**Abstract**

Brain histamine regulates the important physiological functions including sleep-wake cycles acting as a neurotransmitter. Although neurotransmitter concentration in the synaptic clefts is strictly regulated by the clearance systems, the mechanisms of histamine clearance remained almost unclear. Our previous studies have demonstrated that histamine N-methyltransferase (HNMT), a histamine-metabolizing enzyme, was important for histamine clearance in vitro. Thus, in order to clarify the importance of HNMT in vivo, we analyzed HNMT deficient mice in this study.

First, we revealed that the histamine content in the brain lysate of HNMT KO was 6 times as abundant as that of WT, confirming that HNMT was essential for histamine clearance in the brain. Next, most of Hnmt KO was wounded in home cages, suggesting the high aggression in Hnmt KO. We confirmed the high aggressive behaviors of Hnmt KO in the resident-intruder test and aggressive biting behaviors test. The aggressive behaviors of Hnmt KO in the resident-intruder test were significantly decreased by the pretreatment with a H2 antagonist zolantidine but not with a H1 antagonist pyrilamine, indicating that excessive H2 activation led to the high aggressive behaviors. In addition, the locomotor activities significantly decreased in Hnmt KO. Because histamine is known to the key molecule for the wakefulness, we suggested that abnormal histamine concentration disrupted the sleep-wake cycles leading to the decrease of locomotor activity. The sleep analysis has elucidated that a prolonged waking time of KO in light period with extended sleep time in dark period, implying that high brain histamine induced by Hnmt deficiency prolonged the wakefulness in light period. These results indicated that Hnmt might contribute to the regulation of aggression and sleep-wake cycles in mice through the maintaining for the histamine concentration and histaminergic neuronal activities.

**PT743**

Mental Health status of Correctional Officers in Correctional Institutions

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**Abstract**

**Objectives:** The purpose of this study is to measure the current levels of mental health statuses of correctional officers using various instruments. The result of the study could help establish appropriate solutions and policies for the officers.

**Methods:** Subjects were 2571 correctional officers from 50 correctional facilities in South Korea. They were asked to answer or rate their occupational experiences with using diverse inventories and scales such as Maslach Burnout Inventory (MBI), Korean Occupational Stress Scale (KROSS), The Job Satisfaction Scale by Davison and Cooper, The Korean version of Beck Depression Inventory (K-BDI), and Rosenberg’s Self-Esteem Scale (RSE). We also gathered additional data with working conditions and treatment.

**Results:** The burnout score of the correctional officer was higher than that of the other occupations based on Maslach Burnout Inventory (MBI). Using the Korean Occupational Stress Scale (KROSS), the averaged occupational stress of the correctional officer was higher than that of the other occupations. The average score of job satisfaction was lower than that of the other occupations. The average depression level of the correctional officer was 9.36 using the Korean version of Beck Depression Inventory (K-BDI). The level of self-esteem was lower than that of the other occupations based on Rosenberg’s Self-Esteem Scale (RSE). In addition to the five different evaluations, the mental health status of male officers was worse than female officers. Meanwhile, we noticed that they already understood the state of their working environment and the employment treatment was worse than the other occupations.

**Conclusion:** This research shows the mental health status of the correctional officer is worse than the other occupations. This finding emphasizes the need for a system to regularly assess mental health states of the officers and solutions for improvements.

**Key Words:** Correctional institution · Correctional officers · Mental health · South Korea.