The Role of Oxytocin in Animal Behaviors and Welfare (Advanced Studies on Sustainable Animal Production: Interrelationships among Human, Animal and Environment, 8th International Symposium of Integrated Field Science)

1-5. The Role of Oxytocin in Animal Behaviors and Welfare

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Neurohypophysial hormone oxytocin (OXT) was known to have an essential function in parturition and milk ejection. Recent studies including ours have also shown that OXT in a brain acts as an important neuromodulator to regulate several social behaviors, such as maternal behavior, mother/infant relationship, social recognition, male aggression and so on. We generated model disease mice lacking *Oxt* or *Oxtr* gene, and with them, we've continuously studied the physiological functions of OXT/OXTR in a way of behavioral neuroscience. We further generated the Oxtr-Venus knockin mice[1] to elucidate the localization of OXTR in brain, and found that OXTR was expressed in many nuclei in a brain, which were related to the regions controlling social behaviors. Many research groups reported the importance of OXT system to establish social relationship between individual animals, including model experimental animal, dog, and even human. Moreover, recent reports demonstrated that the intranasal administration of OXT improved emotion recognition of ASD (autistic spectrum disorders) patients. These results also imply the importance of OXT system from the viewpoint of animal welfare, because the concentration of OXT or distribution and expression level of OXTR may reflect the stress level of animals. Moreover, molecular-genetic breeding with modification of *Oxt* and /or *Oxtr* genes may potentially generate new domestic creatures with more stabilized mind and resistance to higher stress.

1) Yoshida, M., et al., *J.Neuroscience* **29**;2259 (2009)