Effects of various stresses on Behavior and Intracerebral Monoamine Contents in Chicks

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To realize the effect of various stress on chicks, we conducted two types of experiments. In Experiment 1, we examined the relationship between fear memories with stress and the response of monoamine. Chicks were exposed to heat stress with visual and auditory stimuli as conditioned stimuli. After that, we gave chicks a visual or auditory stimulus and measured their intracerebral monoamine contents. The results of monoamine response suggested that the fear memory depended heat stress was recalled by visual stimulus more strongly than auditory stimulus. In Experiment 2, we surveyed the qualitative differences of chemical stress (exposing xylene gas to chicks) and two social stresses (isolated stress, overcrowded stress) affecting behaviors and monoamine in chicks. Chicks showed the different pattern of behavior in response to each stress. For example, the spontaneous motor activity of chick in isolated group was higher and that in overcrowded group was lower than control group. The norepinephrine level in chemical stress group is higher than that in overcrowded group. Serotonin level in the brain stem decreased in all stress groups. These results suggested that each stress had different influence on behavior or norepinephrine and any stress similarly perturbed mental stability via serotonin system in chicks.