

30amF-600

胎児成育環境と生後の健康 - 受精鶏卵 - 鶏胚 - ヒヨコ系を用いて -

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Aim: To evaluate the direct exposure to chemicals during embryogenesis, we treated chick embryos with Na-valproate (VPA) as a typical experiment and examined their social behaviors after hatching. Methods and Results: Embryos treated with VPA (35 μ mol/egg) on day 14 were similar to controls for hatching date (day 21), hatchlings' abilities, such as motor, imprinting and surface righting. However, these chicks on post-hatching day 3 scored significantly low in "Chick's-Social-Test" as follows. Aggregation test evaluated the speed of 4 chicks, individually isolated by cardboard in a box, to aggregate upon removal of the cardboards. Belonging test evaluated the speed of a chick isolated at a corner to join the group of 3 chicks placed at the opposite corner. Vocalization test for each chick was performed in an isolated corner by using a sound level meter. Results showed that compared with controls VPA-chicks were significantly slow in aggregation (12.7 \pm 2.5 s vs. 2.9 \pm 0.9 s, $P=0.006$) and belonging (3.6 \pm 0.28 s/40 cm vs. 2.6 \pm 0.14 s/40 cm, $P=0.003$) and weak in vocalization (13.4 \pm 2.8 dB/30 s vs. 26.7 \pm 1.3 dB/30 s, $P=0.001$), respectively. We also found that the treatment of methimazole, an inhibitor of thyroid hormone synthesis, and mifepristone, an antagonist of glucocorticoid, impaired imprinting ability and aggregation, belonging and vocalization activity. Conclusion: The present method will be a useful animal model for assessing the effects of environment during embryogenesis on social behaviors in later life.