
RECENT ADVANCES
IN
THERMAL BIOLOGY

Edited by V.N. Gourine

Minsk, 1999

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EFFECT OF THE NO SYNTHASE INHIBITOR, L-NAME, ON BODY TEMPERATURE IN BIRDS IN DIFFERENT PERIODS OF POSTNATAL ONTOGENESIS

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The available literature data indicate that synthesized by nerve cells nitric oxide (NO) performs various functions in the central nervous system, and is involved in the central mechanisms of thermoregulation, in particular [1, 4, 5]. In mammals and birds NO-synthesizing neurons are known to be contained in the hypothalamic and medullary nervous centres which are involved in the regulation of body temperature. In immature mammals (rats) in early postnatal ontogenesis the appearance of nerve cells containing NO-synthase in some structures of the hypothalamic area coincides with the development of thermoregulation [3].

The aim of the present work was to study the effect of the NO synthase inhibitor L-NAME on body temperature in birds (chicken) in different periods of postnatal ontogenesis.

MATERIALS AND METHODS

Thirty five chicken were used. The first group included those of 2 days of age, the second group 5 days, and the third 14 days-old. In each experimental series one group of animals of the same age was injected intraperitoneally with L-NAME (10 mg/kg), and the other control group with D-NAME (10 mg/kg). Rectal temperature was measured 90, 60, 30 min before, immediately after, and 15, 30, 60, 90, 120, 150, 180, 210, and 240 min after the injection.

RESULTS AND DISCUSSION

In 2-days and 5-days chicken L-NAME did not change significantly rectal temperature. In 14-days chicken L-NAME produced hypothermia and a fell of rectal temperature by about 1°C

60-90 min after the injection. These data suggest that functional maturation of NOergic systems involved in thermoregulation in chicken occurs between 5 and 14 postnatal days. This conclusion is supported by morphological studies indicating that in chicken the formation of major features in the distribution of nerve cells, containing NO synthase, in the hypothalamic area occurs between 5 and 10 days of life [2].

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