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Long-term effect of dietary overload lithium on the glucose metabolism in broiler chickens

Short title: Lithium and glucose metabolism

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Highlights

- Overload lithium decreased glucose tolerance in broiler chickens.
- Overload lithium increased insulin sensitivity in broiler chickens.
- Overload lithium decreased gluconeogenesis in the liver and skeletal muscle.
- Overload lithium increased glucose transport in the liver and skeletal muscle.

ABSTRACT

Lithium, like insulin, activates glycogen synthase and stimulates glucose transport in rat adipocytes. To investigate the effect of dietary overload lithium on glucose metabolism in broiler chickens, one-day-old chicks were fed a basal diet supplemented with 0 (control) or 100 mg lithium/kg (overload lithium) for 35 days. Compared to controls, glucose disappearance rates were lower (p = 0.035) 15 to 120 min after glucose gavage, and blood glucose concentrations were lower (p = 0.038) 30 min after insulin injection in overload lithium broilers. Overload lithium decreased (p < 0.05)