

# Evaluation of the effect of midazolam on toxicity induced by administration of high doses of lidocaine in chickens (*Gallus gallus domesticus*)

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## Abstract

The aim of the present study was to evaluate the effect of midazolam on lidocaine-induced toxicity in chickens. Forty-eight healthy, Lohmann broiler chickens (*Gallus gallus domesticus*) divided into two groups (n=24) and four subgroups each (n=6). The birds in group I and II received lidocaine with infusion rates of 15 and 25 mg/kg/min, respectively. Ten minutes before lidocaine administration, in each subgroup, one of the treatments of normal saline or midazolam at the dose rate of 0.25, 0.5 and 1.0 mg/kg were injected into the pectoral muscle. With occurrence of the signs related to the toxicity (convulsion and/or respiratory arrest), lidocaine infusion was disrupted and the administered dose of lidocaine was calculated. In group I, convulsion was observed at the dose of  $38.0 \pm 13.0$  mg/kg in the birds received normal saline while in midazolam-treated birds, respiratory arrest without convulsion occurred at the dose of  $36.1 \pm 12.4$ ,  $39.9 \pm 15.3$ , and  $37.1 \pm 9.1$  mg/kg, respectively. In group II, convulsion occurred saline-treated animals at the dose of  $23.4 \pm 4.8$  mg/kg. The birds that received midazolam showed respiratory arrest without convulsion at the dose of  $31.1 \pm 3.8$ ,  $31.3 \pm 3.8$  and  $28.2 \pm 5.3$  mg/kg, respectively. The birds which received lidocaine at the lower infusion rate showed toxicity signs at the significantly higher doses. Based on the results of the current study, at lower infusion rate, premedication with midazolam protected chickens against convulsion but it had no effect on the threshold of toxicity (respiratory arrest) following administration of high doses of lidocaine.

**Key words:** Midazolam, Lidocaine, Toxicity, Chickens

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