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Comparison of vehicle mortality following in ovo exposure of Japanese quail (Coturnix japonica) eggs to corn oil, triolein and a fatty acid mix

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ABSTRACT

The use of avian egg bioassays for the determination of embryonic mortality and development effects of toxicant exposure is widespread in ecotoxicology. While these studies have a number of experimental limitations to consider, they offer a rapid, cost effective alternative to maternal feeding studies. In preparing to conduct such studies a number of factors must be taken into consideration, including solubility of the toxicant, dissolution solvent, injection site, volume and incubation position. Species-specific requirements for humidity and position should be considered in order to optimize successful incubation with different species. Japanese quail eggs, were injected prior to incubation with 1μl or 5μl of corn oil, triolein or a fatty acid mix, using air cell or albumen injection. Eggs were incubated according to standard poultry practices or in a prone position to determine if there were any differences in hatching success. Hatching success was reduced in eggs that were injected with 5μl and those incubated in a prone position. The highest rate of hatching success was observed for eggs injected with 1μl of the fatty acid mixture through the air cell.

Keywords

embryonic mortality, Japanese quail, vehicle mortality, incubation position, air cell injections, albumen injections