



Using hatching egg injection to improve hatchling performance

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Introduction

Egg incubation is crucial for poultry species. In broilers it accounts for 33% of their lifespan. *In ovo* injection may provide embryos with beneficial substances (nutrients, vitamins, vaccines) before they hatch. This method has advantages compared to delivery of substances to chicks and poults after hatching. The embryos can benefit from the substances, thus leading to better post-hatch performance.

Objectives

- Determine the locations inside hatching eggs that are suitable for *in ovo* injection of substances.
- Identify the best location and injection time that provide the highest absorption of HyD.

Methodology

Obtain broiler hatching eggs at 16, 17, and 18 days of incubation and turkey eggs at 23, 24, and 25 days from a commercial hatchery.

EXPERIMENT 1

PHASE 1

Euthanize hatching eggs

Partly freeze

Cross-section of eggs

Obtain location of embryo structures inside egg

PHASE 2

Euthanize hatching eggs

Inject a dye based on phase 1 data

Partly freeze

Cross-section of eggs

Verify the accuracy of the *in ovo* injections based on location of dye

EXPERIMENT 2

Incubate broiler & turkey eggs

Test various *in ovo* injection protocols

Turkey eggs Chicken eggs

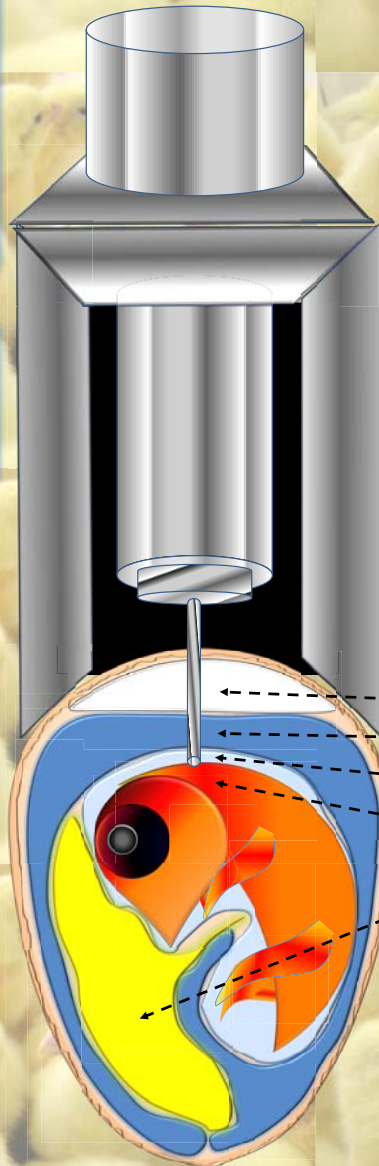
23d	16d
24d	17d
25d	18d

Injectables
HyD Saline

- Air Cell
- Allantois
- Amnion
- Embryo body
- Yolk Sac

Evaluate incubation performance

Obtain 25-OH-D3 plasma level in hatched chicks and poults



Potential benefit to industry

- This research will provide guidelines for effective and precise injection of beneficial substances into hatching eggs.
- *In ovo* injection of HyD could supply embryos with an early source of Vitamin D3.
- Vitamin D3 may improve pre and post-hatch bone formation and immune function.

Acknowledgements

