Potential of Dried Egg Yolk as a Source of Immunoglobulins to Control *Salmonella* in the Gastrointestinal Tract of the Broiler Chicken

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Egg yolk immunoglobulins: IgY

- IgY: promising tool of establishing passive immunity against enteric pathogens in poultry
- IgY against *Salmonella*?

Sensitivity to gastrointestinal conditions?

Source: Chalghoumi et al., 2009
Approach

- **Objective**: Evaluate the gastrointestinal stability of IgY

- **Egg yolk preparations**
  - Freeze-dried yolk powder (FYP)
  - Spray-dried yolk powder (SYP)
  - Freeze-dried water-soluble fraction of yolk powder (WSFP)

- **Hypotheses**:
  - IgY sensible to digestion? ➔ WSFP
  - Protective potential of yolk? ➔ FYP and SYP
Approach (2)

- **Force-feeding assay**

  ![Diagram showing force feeding and transit times](image)

  Transit times: 1.30 or 3 hours

- **Immunological characteristics of feeds**:
  - Control: no antibodies
  - IgY level in FYP = IgY level in SYP
  - IgY level in WSFP >>
What in intestine?

- ELISA detection of undigested anti-Salmonella IgY

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Specific IgY activity (O.D. at 450 nm)
Specific IgY activity (O.D. at 450 nm)

- Duodenum
- Jejunum
- Ileum
- Cecum

**Partially digested antibodies (F(ab)′₂ fragments)**

**Undigested antibodies**
Conclusion

Only **partial resistance** to digestive conditions when IgY distributed in dried egg yolk

Even if protective function of yolk (SYP)

Need for **additionnal protection** to maximize the anti-*Salmonella* effect of the feed additive
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For further information
Please contact marcq.c@fsagx.ac.be. More information on this and related projects can be obtained at www.fsagx.ac.be/zt.