Dietary fatty acids, such as long chain polyunsaturated fatty acids (PUFA's) in the diet of broiler breeder hens can be built into the yolk and therefore be available to the progeny during their development.

**Hypothesis**

PUFA's, such as eicosapentaenoic acid (EPA, 20:5 n-3) and docosahexaenoic acid (DHA, 22:6 n-3) in the broiler breeder hen’s diet, provides more available DHA and EPA for development and eicosanoids to affect the post hatch health and performance of the progeny.

**INTRODUCTION**

Dietary fatty acids, such as long chain polyunsaturated fatty acids (PUFA’s) in the diet of broiler breeder hens can be built into the yolk and therefore be available to the progeny during their development.

**MATERIAL AND METHODS**

**Experimental set-up:**

**Parent stock:**
- 528 Ross broiler breeders + 48 cockerels
- 4 treatments diets:
  - 1.5% soybean oil (SO) (n-6)
  - 0.5% SO + 1% DHA oil (n-3, EPA=DHA)
  - 0.73% SO + 0.77% tuna oil (n-3, DHA)
  - 0.63% SO + 0.87% fish oil (n-3, EPA)
- provided from week 6 onwards to hens only

**Incubations:**
- 1000 eggs at 28–43–58 weeks for generating progeny
- 600 eggs at 33–38–43–48–53–58 w for egg quality experiments

**Progeny:**
- 3 times: eggs set at 28-43-58 w:
  - 720 Ross male broilers
  - 6 replicates per maternal treatment
  - commercial diet
  - 12 animals per treatment euthanized at 0-14-28-39 d

**FUTURE PROSPECTIVES**

Future experiments are planned to investigate the effect of the moment of PUFA enrichment in the broiler breeder hen's diet and the effect of post-hatch enrichment on immunity of the progeny itself.

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