
Studies on the Effects of a Synthetic Estrogen on Chick Embryos¹

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INTRODUCTION

In a series of studies on the effects of synthetic and natural estrogens on the development of fish embryos, a consistent hyperplasia, as well as impairment of development was observed in the studies on one synthetic

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drug, coded #742-A. In all cases, fish embryos exposed to a concentration of two parts per million, before the tail bud had developed, formed hyperplastic growths at the tip of the tail (Jones, data unpublished.) The data reported herein are concerned with the question: Will this drug, #742-A, cause similar effects in developing avian embryos?

MATERIALS AND METHODS

Three experiments were performed using chicken embryos as test organisms. The first experiment was a preliminary test of techniques and the resulting data are not included herein. Nothing of interest was observed.

In the second and third experiments a total of 96 eggs which had been incubated 24 hours were each inoculated with 0.2 ml. of the hormone solution, #742-A, or with 0.2 ml. of a propylene glycol solution. This was accomplished by means of a hypodermic syringe and needle. Thirty-four untreated eggs were similarly incubated and used as controls. The treated and control eggs were further incubated for varying periods of time, 24-56 hours. The eggs were opened and the embryos removed for study and fixation by routine embryological techniques (Rivers, 1948). All embryos were examined, before fixation, for appearance, degree of development, heart beat and abnormalities. After fixation (Bouin's) all specimens were re-examined and some of them were photographed, embedded, sectioned, etc.

The hormone solution used was prepared by Dr. Max Huffman of the Lasdon Foundation, Colorado Springs. One milligram of crystalline hormone was dissolved per milliliter in USP propylene glycol. Assuming the volume of an egg as 50 ml., 0.2 ml. of this solution would produce a concentration of approximately 4 ppm. when injected into an egg.

Propylene glycol from two sources was used. One of these was known to be toxic. The cause of toxicity is unknown.

RESULTS

The data from experiments two and three are shown in combined form in Table I. These represent the combined data from two experiments involving embryos exposed for six different periods of time.