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THE EFFECTS OF DIHYDROERGOTAMINE ON THE DEVELOPING CARDIOVASCULAR SYSTEM OF A CHICK EMBRYO

Ergot alkaloids are a product of the parasitic fungus, ergot (*Claviceps purpurea*). Ingestion may produce life-threatening effects. Ergot poisoning can occur in either the gangrenous or convulsive forms. Since ergot inhabits forage and seed grains, livestock have an increased risk. Ergotamine, a prominent ergot alkaloid, is an agonist of the Serotonin 2B receptor subtypes (5-HT_{2B}R), which are found in the cardiovascular system. Released 5-HT_{2B}R is capable of eliciting vasoconstriction, valvulopathy, and prothrombotic effects. These findings have suggested that there may be impacts of ergotism on reproductive fitness or development of a gestating fetus, however prior research has not investigated this. I hypothesize that ergotamine will negatively impact heart and valve development in the chick embryo's cardiovascular system. I predict that higher concentrations of ergotamine will produce greater impacts. My prediction is supported by the known positive correlation of ergotamine and vasoconstriction of smooth muscles and heart valves. Three

concentrations of dihydroergotamine were injected into embryos of 3 treatment groups (1?g/ml, 0.1 ?g/ml, and 0.01?g/ml), at 1ml each. The control group did not receive dihydroergotamine. To assess heart and heart valves' development, the 24-96 hour slide mounted embryos were observed. Four of the day-14 embryos, from each treatment group, were used for heart dissections and analyses. The remaining four embryos were used for a Glycosaminoglycan-assay that tests for the presence of glycosaminoglycans, which are crucial for many functions of proper cellular growth. We have observed that as the concentration of dihydroergotamine increased the weights of the embryo's decreased. We predict that this trend in data will also be seen in overall heart development. If the data is consistent to what we have proposed this means, there will be a significant impact on animals that ingest ergot and, therefore, needs to be explored further.

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