Hypothesis and Aims

Hypothesis:

Chicken embryos, specifically those grown in vitro cultures, are susceptible to ventral body wall deformities (VBWD). Our study aims to investigate the effect of ethanol-induced ventral body wall deformity in chick embryos grown in vitro using a variety of culture vessels.

Aims:

1. To determine the effect of ethanol treatment on the development of ventral body wall deformity in chick embryos.
2. To compare the use of various culture vessels on the incidence of ventral body wall deformity in chick embryos.
3. To assess the impact of ethanol treatment on the development of ventral body wall deformity in chick embryos grown in vitro.

Materials and Methods

Cracking & Transferring the Embryo:

1. Remove the egg from incubator at 25-28 hours and insert into a sterile 30 ml test tube with 10 ml of saline.
2. Tilt the test tube and gently aspirate the yolk to the test tube until the yolk fills the test tube.
3. Place the test tube into a petri dish with 10 ml of saline.
4. Tilt the test tube and gently aspirate the yolk to the test tube until the yolk fills the test tube.
5. Place the test tube into a petri dish with 10 ml of saline.
6. Place the test tube into a petri dish with 10 ml of saline.

Ethanol Induction:

1. Add 25% ethanol to the incubation solution of the chick embryo.
2. Incubate the chick embryo at 37°C for 48 hours.
3. Remove the chick embryo from the incubation solution.
4. Place the chick embryo in a fresh incubation solution.

Results

1. Culture chick embryos in the THP and cube vessels with water treatment and ethanol treatment after 55-56 hr incubation.
2. Collect and compare ventral wall closure and developmental markers of left and right ventral body wall closure.

Discussion & Conclusion

Discussion:

Ethanol has been reported to alter the migration of trunk cells during development. Our study suggests that ethanol may alter the migration of trunk cells, leading to a decrease in the number of trunk cells and an increase in the number of ventral body wall deformities.

Conclusion:

- Ethanol-induced ventral body wall deformity in chick embryos grown in vitro cultures is a complex process involving the migration of trunk cells and the development of the ventral body wall.
- Further studies are needed to elucidate the mechanism by which ethanol induces ventral body wall deformity in chick embryos.

Future Research:

- Investigate the role of other environmental factors on the incidence of ventral body wall deformity in chick embryos grown in vitro cultures.
- Explore the role of genetic factors in the development of ventral body wall deformity in chick embryos grown in vitro cultures.
- Develop new culture vessels that can reduce the incidence of ventral body wall deformity in chick embryos grown in vitro cultures.

References


Figure 15. The comparison of viability when chick embryos are cultured in different vessels. The graph shows the percentage of chick embryos grown in different vessels that exhibited the highest viability. The THP vessel consistently exhibited the highest viability, followed by the cube vessel, and then the in ovo vessel. The in ovo vessel exhibited the lowest viability.

Figure 16. Percentage of chick embryos exhibiting ventral body wall deformity in different vessels/treatment type. The graph shows the percentage of chick embryos that exhibited ventral body wall deformity in different vessels/treatment types. The THP vessel exhibited the highest percentage of ventral body wall deformity, followed by the cube vessel, and then the in ovo vessel. The in ovo vessel exhibited the lowest percentage of ventral body wall deformity.

Figure 17. Development of chick embryos in the cube vessel. The graph shows the development of chick embryos in the cube vessel, with different treatment types. The THP vessel exhibited the highest viability, followed by the cube vessel, and then the in ovo vessel.