Oxygen and genes

Differential gene expression in the heart of hypoxic chicken fetuses

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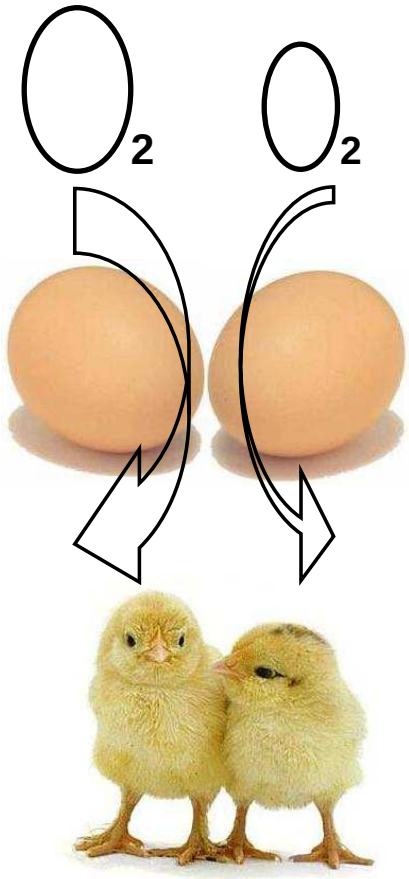
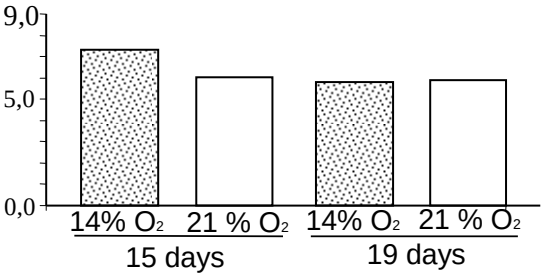
Oxygen is very important during incubation. Low oxygen concentration affects incubating chickens eggs resulting in bigger heart relatively to body mass. The similar to ens-1, apo-A1 and p22 genes are found to be linked to that relatively increased heart size.

Aim: Identify genes involved in hypertrophy using microarray and quantitative polymerase chain reaction techniques.



Treatment: eggs incubated at 14 % Oxygen and sampled after 15 days and 19 days. Controls are at 21% oxygen. Total RNA extracted and used to check difference in gene expression

Results: fetuses incubated in 14% oxygen have a lower body mass and a higher heart mass compared to controls. Microarray identifies apo-A1, p22 and similar to ENS-1 among others. Quantitative PCR does not comfirm them.



Ratio (Heart weight/Embryo weight)

Conclusion: The identified genes are related to cell division and stem cells differentiation. Further research is required to better understand their mechanisms.

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