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Abstract

Measurements of changes in the number of cells of the chicken blastoderm during egg storage

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Egg storage longer than 7 days has been reported to have detrimental effects on hatchability and chick quality. At oviposition the embryo is composed of a multilayered blastoderm with a total of 30,000 to 90,000 cells according to rough estimates found in literature. Changes in the number of blastoderm cells during storage are not well defined.

It can be hypothesized that a decrease in the total number of blastoderm cells negatively influences hatchability and chick quality after a pro-longed storage period. Therefore, three parameters are tested in this study to evaluate changes in the number of blastoderm cells during the storage period. After fixation the blastoderm is immunohistologically stained, first for apoptosis (Caspase-3 + Peroxidase), then for mitosis (Histon-3 + Alexa Fluor 546) and finally all nuclei are stained with Hoechst 33251 to count the total number of blastoderm cells. An other method to count the total number of blastoderm cells is to dissociate the blastoderm cells after all nuclei are stained with Hoechst 33251 and count three volume samples in a Bürker count chamber. The advantages and disadvantages of these two methods will be discussed.

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