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The identification of the primordial germ cells in the male gonads of pheasant (Phasianus colchicus) embryos using histochemical and immunostaining techniques

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Abstract

The purpose of this research was to look for primordial germ cells in male gonads at various stages of the pheasant embryos. Primordial germ cells are cells that differentiate into sperm or oocyte and are important for the transmission of genetic information across generations. In this study, embryos were extracted in embryonic days 8-24. The primordial germ cells were recognized in paraffin and resin tissue sections on days 8 to 10 of embryogenesis owing to the specific properties of these cells, which included a large size, large nucleus and nucleolus, and little cytoplasm. The primordial germ cells in the testes were identified using histochemical and immunostaining techniques. Periodic Acid-Schiff method, immunohistochemistry using stage-specific embryonic antigen-1, alkaline phosphatase and toluidine blue staining were used to identify primordial germ cells. Germ cells were detected only in semithin sections at older ages (10-24 days). Moreover, the response of these cells was negative, at all ages, to alkaline phosphatase, Periodic Acid-Schiff staining and stage-specific embryonic antigen-1 reaction. The findings of this study revealed that primordial germ cells in the testicular tissue of pheasant embryos of all ages tested responded adversely to histochemical and immunohistochemical techniques. Also, this study showed that routine staining of hematoxylin and eosin and using semithin sections are suitable for the histological diagnosis of these cells.

Key words: Primordial germ cells, Immunohistochemistry, Alkaline phosphatase, Pheasant, Male gonads

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