

## EPIGENETIC REPROGRAMMING OF CANCER CELLS UNDER EMBRYONIC MICROENVIRONMENT

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**Introduction.** The idea of epigenetic reprogramming of cancer cells by an embryonic microenvironment possesses potential interest from the prospect of both basic science and potential therapeutic strategies. Chick embryo extract (CEE) has been used for the successful expansion of many specific stem cells and has demonstrated the ability to facilitate DNA demethylation. The current study was conducted to compare the status of DNA methylation in highly metastatic and less metastatic osteosarcoma cells and to investigate whether CEE may affect the epigenetic regulation of tumor suppressor genes and thus change the metastatic phenotypes of highly metastatic osteosarcoma cells.

**Materials and Methods.** K7M2 murine OS cells were treated with CEE to determine its potential effect on DNA methylation, cell apoptosis, and invasion capacity.

**Results and Discussion.** Our current results suggest that the methylation status of tumor suppressor genes (p16, p53, and E-cadherin) is significantly greater in highly metastatic mouse osteosarcoma K7M2 cells in comparison with less metastatic mouse osteosarcoma K12 cells. CEE treatment of K7M2 cells caused demethylation of p16, p53, and E-cadherin genes, upregulated their expression, and resulted in the reversion of metastatic phenotypes in highly metastatic osteosarcoma cells.

**Conclusions.** CEE may promote the reversion of metastatic phenotypes of osteosarcoma cells and can be a helpful tool to study osteosarcoma tumor reversion by epigenetic reprogramming. Demethylation of tumor suppressor genes in osteosarcoma may represent a novel strategy to diminish the metastatic potential of this neoplasm. Further studies, both in vitro and in vivo, are warranted to evaluate the clinical feasibility of this approach as an adjuvant to current therapy.

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