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Oct4-expressing cells in human amniotic fluid: a new source for stem cell research? FREE

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Abstract

BACKGROUND: It is the hope of investigators and patients alike that in future the isolation of pluripotent human stem cells will allow the establishment of therapeutic concepts for a wide variety of diseases. A major aim in this respect is the identification of new sources for pluripotent stem cells. Oct4 is a marker for pluripotent human stem cells so far known to be expressed in embryonal carcinoma cells, embryonic stem cells and embryonic germ cells. **METHODS:** Cells from human amniotic fluid samples were analysed for mRNA expression of Oct4, stem cell factor, vimentin and alkaline phosphatase via RT-PCR. Oct4 protein expression was investigated by Western blot analysis and immunocytochemistry. Oct4 positive cells were also analysed for the expression of cyclin A protein via double immunostaining. **RESULTS:** Performing RT-PCR, Western blot and immunocytochemical analyses revealed that in human amniotic fluid in the background of Oct4 negative cells a distinct population of cells can be found, which express Oct4 in the nucleus. Oct4 positive amniotic fluid cell samples also express stem cell factor, vimentin and alkaline phosphatase mRNA. The Oct4 positive amniotic fluid cells are actively dividing, proven by the detection of cyclin A expression. **CONCLUSIONS:** The results presented here suggest that human amniotic fluid may represent a new source for the isolation of human Oct4 positive stem cells without raising the ethical concerns associated with human embryonic research.

Keywords: *Key words: human amniotic fluid/Oct4/pluripotency/stem cells*

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Development of neural stem cell in the adult brain, the higher arithmetic, unlike some other cases, imitates buying and selling, breaking the framework of the usual ideas.

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