

## Expanding and characterizations of colon cancer-derived stem cells

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**Background:** Increasing and spreading out of cancer stem cells as spheroids were verified in our previous studies. But, capability of primary tumor-derived stem cells to keep their unique properties *in vitro* is still doubtful. So, the goal of this study was to segregate, expand and characterize the colon cancer-derived stem cells.

**Materials & Methods:** In the present work, colon cancer stem cells indicators including CD44 and EPCAM in spheroid and parental cells were analyzed by flow cytometry. The appearance levels of stemness genes in both spheroid and parental cells were investigated using real-time PCR. Tumorigenic potential of spheroid cell was evaluated and used for the implantation of tumor xenografts into nude mice.

**Results:** The earned data showed 75% of spheroids were CD44+/EpCAM+, while parental cells only expressed 18% of CD44/EpCAM markers ( $p < 0.01$ ). In comparison with the parental cells, the expression levels of stemness genes, like *Sox2*, *Oct4*, *Nanog*, *C-myc*, and *Klf4* were significantly increased in spheroid cells ( $p < 0.05$ ). Furthermore, as little as 1000 spheroid cells were sufficient to obtain tumor growth in nude mice, while  $1 \times 10^6$  of parental cells was needed to generate tumor.

**Conclusion:** Sphere formation test is a useful method to enhance cancer stem cells. Spheroid cells showed increasing manifestation of stemness genes and tumorigenic activity in nude mice.

### Biography

Kianosh Vahedi is a student of Oncology at the Shahid Beheshti University of Medical Science, Iran. He is pursuing his PhD from Shahid Beheshti University of Medical Science, Iran. He has published more than 15 papers in reputed journals and has been serving as an Editorial Board Member of reputed.

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