Reviewer's report

Title: Therapy with un-engineered naive rat umbilical cord matrix stem cells markedly inhibits growth of murine lung adenocarcinoma

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Reviewer: sung kim

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Authors in this manuscript that rat umbilical cord matrix stem cells (UCMSCs) alone remarkably attenuate the growth of lung carcinoma cells in vitro and in a mouse syngeneic lung carcinoma graft model and could be used for targeted cytotherapy for lung cancer. Despite some interesting data, this MS has some concerns as follows:

This group has already published many papers with UCMSCs. In this study, they used naïve rat umbilical cord matrix stem cells to show antitumor activity in Lewis lung cancer cells. Based on your data, UCMSC (~1/3 of LLCs) looks like exerting antitumor activity via G1 arrest in LLCs. Nonetheless, readers cannot confirm the antitumor mechanism clearly, since your data are still preliminary.

1. Although you performed animal study twice using different numbers of LLC cells as shown in page 7, which experimental data were shown in Figures?

2. Usually we use two types of LLC models, one is an orthotopic tumor growth model (subcutaneously injected LLC tumor growth model) and another is an experimental metastasis model (i.v. injection of LLC for evaluating lung metastatic colonies). You’d better use an orthotopic tumor growth model than an experimental metastasis model you used in your study. If UCMS can inhibit the weight of lungs with metastatic LLCs and induce apoptosis (DAPI), your experimental approach is not reasonable.

3. In Fig. 7. It’s difficult to find apoptotic bodies in lung tissue by DAPI staining. Use TUNEL assay.

4. If you focused on metastasis, you have to show invasion assay and effect of CXCR2, MMP2, 9 and other adhesion molecules. Otherwise, if you want to show G1 arrest, you have to show histogram data and effect on CDKs at protein levels.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.