Overexpression of LASP-1 mediates migration and proliferation of human ovarian cancer cells and influences zyxin localisation.

LIM and SH3 protein 1 (LASP-1), initially identified from human breast cancer, is a specific focal adhesion protein involved in cell proliferation and migration. In the present work, we analysed the effect of LASP-1 on biology and function of human ovarian cancer cell line SKOV-3 using small interfering RNA technique (siRNA). Transfection with LASP-1-specific siRNA resulted in a reduced protein level of LASP-1 in SKOV-3 cells. The siRNA-treated cells were arrested in G(2)/M phase of the cell cycle and proliferation of the tumour cells was suppressed by 60-90% corresponding to around 70% of the cells being transfected successfully as seen by immunofluorescence. Moreover, transfected tumour cells showed a 40% reduced migration. LASP-1 silencing is accompanied by a reduced binding of the LASP-1-binding partner zyxin to focal contacts without changes in actin stress fibre and microtubule organisation or focal adhesion morphology as observed by immunofluorescence. In contrast, silencing of zyxin is not influencing cell migration and had neither influence on LASP-1 expression nor actin cytoskeleton and focal contact morphology suggesting that LASP-1 is necessary and sufficient for recruiting zyxin to focal contacts. The data provide evidence for an essential role of LASP-1 in tumour cell growth and
migration, possibly through influencing zyxin localization.

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