Original Article

# The Effect of Sortilin Silencing on Ovarian Carcinoma Cells

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## Abstract

**Background:** Our preliminary data on the protein expression of SORT1 in ovarian carcinoma tissues showed that sortilin was overexpressed in ovarian carcinoma patients and cell lines, while non-malignant ovaries expressed comparably lower amount of this protein. In spite of diverse ligands and also different putative functions of sortilin (NTR3), the function of overexpressed sortilin in ovarian carcinoma cells is an intriguing subject of inquiry. The aim of this study was, therefore, to investigate the functional role of sortilin in survival of ovarian carcinoma cell line.

**Methods:** Expression of sortilin was knocked down using RNAi technology in the ovarian carcinoma cell line, Caov-4. Silencing of SORT1 expression was assessed using real-time qPCR and Western blot analyses. Apoptosis induction was evaluated using flow cytometry by considering annexin-V FITC binding. [$^3$H]-thymidine incorporation assay was also used to evaluate cell proliferation capacity.

**Results:** Real-time qPCR and Western blot analyses showed that expression of sortilin was reduced by nearly 70-80% in the siRNA transfected cells. Knocking down of sortilin expression resulted in increased apoptosis (27.5±0.48%) in siRNA-treated ovarian carcinoma cell line. Sortilin silencing led to significant inhibition of proliferation (40.1%) in siRNA-transfected Caov-4 cells as compared to mock control-transfected counterpart ($p<0.05$).

**Conclusion:** As it was suspected from overexpression of sortilin in ovarian tumor cells, a cell survival role for sortilin can be deduced from these results. In conclusion, the potency of apoptosis induction via silencing of sortilin expression in tumor cells may introduce sortilin as a potential candidate for developing a novel targeted therapy in patients with ovarian carcinoma.

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**Keywords:** Apoptosis, Cancer, Ovary, Silencing, siRNA, Sortilin

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## Introduction

Ovarian cancer is one of the most lethal gynecologic malignancies. In spite of the sig- nificant advances in the treatment of