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Anti-ovarian cancer cells activity of nitric oxide donors

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Despite a significant improvement in the conventional anti-ovarian cancer therapies, tumor cell resistance to various cytostatic drugs remains a relevant problem. The Nitric Oxide (NO) donors - synthetic compounds that release NO, *in vivo* and/or *in vitro*, have been considered as a potential anti-cancer agent. The effect of NO donors on the biological activity of ovarian cancer cells in the presence or absence of cisplatin was determined. Two members of NONOates family with different half-live time were used. Various ovarian cancer cell lines as well as cancer cells isolated from ascites of patients with advanced stage of diseases were used in these studies. We found that NO donors inhibited the ovarian cancer cells growth mainly by induction their apoptosis. Moreover, NO donors decreased the activity of signaling proteins (STAT3 and AKT) involved in uncontrolled proliferation of ovarian cancer cells. We also found that NO donors have low ability to inhibit the production and secretion of pro-metastatic factors. Our study showed that NO donors significantly enhanced the susceptibility of ovarian cancer cells to cytotoxicity of cisplatin. We demonstrated that NO donors increased the number of late apoptotic/necrotic ovarian cancer cells treated with cisplatin. We also found that none of NO donors or their combination with cisplatin affects the expression of genes (*ABCB1*, *BIRC5* and *PTEN*) involved in the drug resistance. The obtained results show that NO donors have a high potential of being a supporting compounds in the ovarian cancer therapies.

Biography

Magdalena Klink has completed her PhD in 1994 and Habilitation in 2005, at the University of Lodz. Since 2004, she has been working at the Institute of Medical Biology, Polish Academy of Sciences in Lodz, now, as an Associate Professor. She was the Manager of several research projects funded by national organizations and the Contractor of project from the European Regional Development Fund (POIG). She is Supervisor in two finished Doctoral programs. She is the Author of 48 scientific publications and Editor of a monograph. For several years, she serves as Editor of the *Mediators of Inflammation* and in WSZKiPZ lectures in biology with genetics.

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