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Novel phage displayed derived nanobody against placenta growth factor inhibited *in vitro* and *in vivo* angiogenesis model

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Nanobody is smallest antigen binding domain derived from camelids family. The small size and other evolutionary property could introduce it as novel drug candidate especially against cancer. Over expression of angiogenesis is a highlighted character of tumor tissues. Many angiogenic factors like VEGF family involved in new vessels formation in cancerous tissues. Placenta growth factor (PLGF) is highly expressed in pathologic condition of angiogenesis. Targeting of PLGF could have inhibitory effect on angiogenesis in cell and animal model. The aim of this study is targeting of PLGF by developed novel nanobody. We constructed a PLGF nanobody library in pHEN-4 phagemid vector. This library specify by biopanning on immobilized recombinant PLGF. After screening of individual colonies, we selected different nanobody for soluble expression. Affinity of this nanobody was done by ELISA based method and the effect of this nanobody on angiogenesis were assessment by proliferation, migration, invasion, 3D capillary formation and chorioallantoic membrane assay (CAM). This nanobody could inhibit the proliferation, migration and tube formation of HUVEC cells and invasion of MDA-MB231 breast cancer cells. In addition of *in vitro* assays, this nanobody could inhibit the neo-vascular formation of fertilized eggs. A novel and high affinity specific-Nb against PLGF with anti-angiogenesis effects on endothelial, breast cancer cells and on *in vivo* model was developed in this investigation.

Biography

Roghaye Arezumand has completed her PhD from Pasteur Institute of Iran in 2015. She has published about 10 papers in scientific journals.

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