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Nanoparticles as new tools for inhibition of cancer angiogenesis

Babak Negahdari and Nasser Hashemi Goradel
Tehran University of Medical Sciences, Iran

Angiogenesis is known as one of the hallmarks of cancer. Multiple lines evidence indicated that Vascular Endothelium Growth Factor (VEGF) is a key player in the progression of angiogenesis and exerts its functions via interaction with Tyrosine Kinase Receptors (TKRs). These receptors could trigger a variety of cascades that lead to the supply of oxygen and nutrients to tumor cells and survival of these cells. With respect to pivotal role of angiogenesis in the tumor growth and survival, finding new therapeutic approaches via targeting angiogenesis could open a new horizon in cancer therapy. Among various types of therapeutic strategies, nanotechnology has emerged as new approach for the treatment of various cancers. Nanoparticles (NPs) could be used as effective tools for targeting a variety of therapeutic agents. According to *in vitro* and *in vivo* studies, NPs are efficient in depriving tumor cells from nutrients and oxygen by inhibiting angiogenesis. However, the utilization of NPs is associated with a variety of limitations. It seems that new approaches such as NPs conjugated with hydrogels could overcome to some limitations. In the present review, we summarize various mechanisms involved in angiogenesis, common anti-angiogenesis strategies and application of NPs for targeting angiogenesis in various cancers.

negahdari_md@yahoo.com

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