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Título/*Title*: ***Nanotechnology-based systems in oncology: challenges and opportunities***

Tumors are live entities and their survival depends on the immune system, surrounding cells, orchestrated pathways, and processes. Choosing more than one target from the pool of tumor–stroma interactions, such as the angiogenic blood vessel network, which ensures tumor survival, growth and metastases, can profoundly benefit therapeutic approaches. Blood vessels are excellent targets, since they are readily accessible to intravenously administered therapy, avoiding problems related with poor drug penetration into the tumor owing to high interstitial pressure gradients. Moreover, treatment selectivity against proliferative tumor-derived endothelial cells is likely to be achieved, because angiogenic blood vessels overexpress specific molecular markers at their surface (which distinguishes them from the vasculature of individual organs).

The prevailing new rationale aims at the development of targeted selective therapies to the tumor microenvironment on the basis of characterized mechanisms, with the possibility of directing and concentrating a therapeutic agent only at the desired target site, while improving access to intracellular sites of action. If the same targeted system is capable of identifying a common target and perform its therapeutic action in the selected cell populations within a tumor, improved therapeutic outcomes are expected. Within this scope, in the present communication the potential of ligand-mediated targeted delivery, with nanotechnologies-based approaches, in the treatment of solid tumors will be discussed.