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# Metal-Organic Frameworks in Nanotherapeutics: Development of Novel Drug Nanocarriers for Conventional and Nuclear Oncology

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In the search for novel therapeutic approaches that could circumvent recognized drawbacks of conventional therapy against cancer, several systems based on nanoparticles are currently being investigated. Metal-organic frameworks (MOFs) are porous materials that result from the assembly of metal ions or inorganic clusters with polydentate organic linkers. These arrangements lead to porous structures that have been under study during the last years due to their potentiality for different technological applications, like gas storage or purification, catalysis or sensors. The selection of the metal and the linker has significant effects on the structure and properties of the MOF. In recent years these hybrid metal-organic materials have emerged as potential carrier systems for drugs due to their relevant properties for this field, like biodegradability, low toxicity, high and regular porosities, tunable pore size and connectivity, high drug loading capacity, controlled drug release and ability to prolong the drug residence time and to reduce drug toxicity. These properties can be tuned by modifying MOFs structures and porosities. Nanoscale MOFs (NMOFs) are currently under research for the selective delivery of clinical use metal-based antitumor drugs. These materials could be suitable not only as vehicles of conventional organic and metal-based antitumor drugs but also for the development of nanoparticle systems for nuclear oncology or radiotherapy.

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