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Scaffolds as Carriers of Drugs and Biomolecules for Bone Tissue Bioengineering

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The topic of delivery systems for various drugs and biological molecules, including scaffold technologies, is relevant, complex and multifaceted, but is covered fragmentarily in the scientific literature. Many publications did not present the physicochemical properties of carrier materials, the features of their biodegradation, which can affect the release of molecules from the matrix and their pharmacological activity. In other references, the pharmacokinetics of drugs and/or cellular/tissue reactions are poorly described. As a result, disparate information makes it difficult to purposefully search for material and does not allow drawing unambiguous conclusions on topical issue. In this regard, on the basis of reviews and original articles, information on the development and functioning of scaffolds as carriers of me-

dicinal and biological molecules was collected and critically comprehended; materials and substances used in delivery systems, as well as cellular and tissue reactions during their employment, are classified. Especial attention in our review is paid to composite scaffolds with a calcium phosphate component being the carriers of various pharmacological agents for effective delivery systems in applications to bone tissue bioengineering.

Keywords: stem and bone cells *in vitro*, *in vivo* bone defects, clinical trials, composite materials, calcium phosphates, medicines, biomolecules, drug delivery