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Rat Bile Duct Decellularization

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Abstract

© 2016, Springer Science+Business Media New York.The repair and reconstruction of bile ducts damaged by disease or trauma remains a vexing medical problem. In particular, surgeons have few options when it comes to a long segment reconstruction of the bile duct. Tissue-engineered substitutes, with properties similar to the native tissue, might represent a solution for the functional reconstruction of bile ducts. In particular, decellularized tissues and organs represent a suitable option for tissue engineering when specific scaffolds are needed. However, the optimal conditions to completely remove all the cellular components and minimally affect the structural and residual biochemical properties of the extracellular matrix are still to be found. This paper presents the characterization of rat bile ducts after implementing an established detergent-enzymatic decellularization method. One cycle was enough to generate a complete decellularized bile duct matrix, histologically and structurally similar to the native one. The network of collagen, reticular and elastic fibers, found in the native bile duct matrix was well preserved. Moreover, the decellularization approach did not affect the elastin content.

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Keywords

Bile ducts, Decellularization, Detergent-enzymatic approach, Extracellular matrix