SUBCUTANEOUS TISSUE RESPONSE TO THE TWO IMPLANTED COLLAGEN-BASED MEMBRANES OF DIFFERENT ORIGIN

Milena Radenković–Stošić¹, Sanja Stojanović^{1,2}, Milica Tomić¹, Jelena Živković², Vladan Mirjanić³, Predrag Kovačević^{4,5}, Stevo Najman^{1,2}

Collagen, as the main structural protein in mammals, fulfils the fundamental requirements to be a ssuitable biomaterial component used in tissue engineering. Due to its biocompatibility and biodegradability, collagen can be utilized in various forms for guided soft and bone tissue regeneration. Collagen-based membranes, frequently used for both soft and hard tissue regeneration, can differ in their origin (porcine, bovine, equine), physicochemical characteristics such as architecture, porosity, absorption ability, and manufacturing processes which may influence tissue response and final outcome. In this study, we examined and compared tissue response to the two implanted collagen membranes of different origins: porcine vs. equine. The subcutaneous implantation model in BALB/c mice was used, and tissue response was evaluated 3, 10 and 30 days after implantation. Tissue was analyzed by histological and histomorphometric methods. Our study revealed variations in subcutaneous tissue response, patterns of cell infiltration into collagen membranes, and changes in membrane thickness and resorption that may be attributed to the differences in membrane origin but also to the differences in the manufacturing process. We can conclude that both membranes are suitable for application in guided tissue regeneration.

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