

COMPARISON OF CAT KIDNEY DECELLULARIZATION METHODS FOR FUTURE APPLICATION IN FELINE KIDNEY TRANSPLANT

Brenda de Oliveira Horvath Pereira¹
João Vítor Barbosa Tenório Fireman²
Giovanna Macedo de Siqueira³
Bianca de Oliveira Horvath-Pereira⁴
Gustavo Henrique Doná Rodrigues de Almeida⁵
Maria Angelica Miglino⁶
Ana Claudia de Oliveira Carreira⁷
Leandro Norberto da Silva Júnior⁸

Kidney diseases are highly common pathologies in feline species, and the treatment is based on the decrease of disease's progression. The kidney transplant would be the ideal treatment in many cases of advanced stages of disease, however, due to post-surgical complications, collateral effects of the chronic use of corticoids and the lack of donors, this option becomes unviable. With the option of producing non-immunogenic organs, bioengineering has been advancing for the production of functional organs. In this way, the objective of this study was to evaluate the pre-existent decellularization methods performed in other species applied in feline kidneys. For such, 12 kidneys were collected from cats that died in hospital routine. For the decellularization, the renal artery was cannulated and 3 perfusion protocols were performed: 1: Sodium Dodecyl Sulfate (SDS) 0,5% for 36 hours; 2: SDS 1% for 36 hours and Triton X 100 for 30 minutes; 3: Cycles of 30 minutes of washing with NaCl saturated solution, followed by 30 minutes of SDS 0,5%, and 30 minutes of deionized water. 20 cycles of 1,5 hours were performed, totalizing 30 hours of perfusion. All kidneys were then washed for 2 hours in deionized water and for 15 minutes in PBS 1X. In sequence, the scaffolds were fragmented and fixed for histology colorings of Hematoxylin and Eosin, Masson's trichrome, Picro Sirius Red, Alcian Blue, Fuchsin, and DAPI nucleus fluorescence. As result, the protocols with a long time of exposure to SDS presented a degradation of the components and the tridimensional structure of the matrix, in contrast, the low SDS concentration did not remove the cellular content completely. Still, the protocol 3 presented the best results, with an adequate preservation of the extracellular matrix and its components, proportioning a removal of the cellular content. This protocol presents promising results, providing a structured tridimensional framework that serves as a starting point for future research with the recellularization of cat kidneys for later transplant.

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¹ Veterinary Medicine Student, Universidade Evangélica de Goiás, E-mail: brendhorvath14@gmail.com

² Master's Student, School of Veterinary Medicine and Animal Science of University of São Paulo, E-mail: jfireman9@alumni.usp.br

³ Biomedic, School of Veterinary Medicine and Animal Science of University of São Paulo, E-mail: giovannamacedo12@gmail.com

⁴ PhD Student, School of Veterinary Medicine and Animal Science of University of São Paulo, E-mail: horvath@usp.br

⁵ PhD Student, School of Veterinary Medicine and Animal Science of University of São Paulo, E-mail: almeidaghdr@gmail.com

⁶ PhD, University of Marília, E-mail: miglino@usp.br

⁷ PhD, School of Veterinary Medicine and Animal Science of University of São Paulo, E-mail: ancoc@iq.usp.br

⁸ Advisor / PhD Student, School of Veterinary Medicine and Animal Science of University of São Paulo, E-mail: silvajunior@usp.br