

## Biomechanical Properties of Effectively Washed Xenografts

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### Abstract

A clear understanding of how defatted xenografts behave mechanically is important before they can be used as scaffolds in tissue engineering. Since decellularization can noticeably weaken or change the structure of the tissue, many researchers focus on how different chemical treatments affect its strength. Over the years, several works have measured parameters such as Young's modulus, tensile strength, and bending resistance to compare the effects of various approaches. Interesting results have shown, for example, that sodium dodecyl sulfate often preserves the mechanical properties of bone tissue better than sodium hydroxide or hydrogen peroxide, which tend to reduce key factors like pull-out strength and resistance to cracking. Because the extracellular matrix largely determines how a scaffold behaves under load, choosing the right decellularization and defatting method becomes essential.

In our research, we focused on bovine xenografts processed with different defatting techniques. We evaluated how each method influenced the elastic modulus, compressive strength, and microstructural characteristics of the material. Alongside the mechanical tests, we also looked at their biological behavior – mainly how well cells attach, grow, and begin differentiation – to assess whether these scaffolds could realistically serve as clinically usable materials.

Ultimately, improving defatting techniques with close attention to biomechanical performance can significantly strengthen the role of xenografts as replacements for auto- or allografts. Studies of this kind help determine whether a scaffold can withstand physiological loads and integrate properly with surrounding tissues during regeneration.

### Keywords

Defatted xenografts, bovine, bioscaffolds, tissue engineering, hard tissue, biomechanical properties.