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# Comparison of the effects of preservation methods on structural, biological, and mechanical properties of the human amniotic membrane for medical applications

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## Abstract

Amniotic membrane (AM), the innermost layer of the placenta, is an exceptionally effective biomaterial with diverse applications in clinical medicine. It possesses various biological functions, including scar reduction, anti-inflammatory properties, support for epithelialization, as well as anti-microbial, anti-fibrotic and angio-modulatory effects. Furthermore, its abundant availability, cost-effectiveness, and ethical acceptability make it a compelling biomaterial in the field of medicine. Given the potential unavailability of fresh tissue when needed, the preservation of AM is crucial to ensure a readily accessible and continuous supply for clinical use. However, preserving the properties of AM presents a significant challenge. Therefore, the establishment of standardized protocols for the collection and preservation of AM is vital to ensure optimal tissue quality and enhance patient safety. Various preservation methods, such as cryopreservation, lyophilization, and air-drying, have been employed over the years. However, identifying a preservation method that effectively safeguards AM properties remains an ongoing endeavor. This article aims to review and discuss different sterilization and preservation procedures for AM, as well as their impacts on its histological, physical, and biochemical characteristics.