

HypACT Inject Auto Device – an Easy, Fast and Sterile Method to Produce the Best Quality Platelet Rich Fibrin Membrane

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INTRODUCTION

Platelet rich fibrin (PRF) membrane is a second-generation platelet concentrate, produced from autologous blood in a glass tube without any anticoagulant. It is a biocompatible 3D scaffold, containing fibrin clot, platelets, leukocytes and a high concentration of growth factors. It has been tested in numerous clinical situations usually in dental and maxillofacial applications.¹ We produced a sterile, PRF membrane with constant size by HypACT Inject Auto device and we compared the biological and physical properties with PRF membrane made by glass tube.

EXPERIMENTAL METHODS

We have produced a reproducible, sterile PRF membrane with constant thickness and diameter using the hypACT Inject Auto device. Our aim was to compare the traditional PRF membrane produced in a glasstube (GT-PRF) with the hypACT derived PRF membrane (HI-PRF) based on the following properties: mesenchymal stem cell (MSC) adhesion and proliferation capacity on the membranes, weight loss of the membranes during the culture period, tensile- and strain strength. The examination of the surface and structure characteristics was assessed using electron microscopy and live-dead cell staining using confocal microscopy.

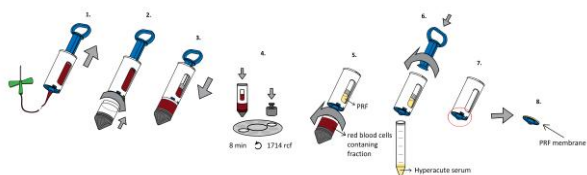


Fig. 1. PRF membrane isolation with hypACT

RESULTS AND DISCUSSION

There were no significant differences in MSC adhesion, proliferation capacity and in the weight loss of the PRF membranes. There was also no significant difference in the tensile and strain strength values; however the typical stress-strain curves of the two types of membranes were different. The surface and structure of the membranes were similar, but in case of HI-PRF membrane platelets are located in the inside of the membrane, while in case of GT-PRF they are located mostly on the surface.

The biological properties of HI-PRF membrane are at least as good as GT-PRF. Furthermore, we can conclude, based on the stress-strain curve, that HI-PRF is homologous, and more suturable compared to GT-PRF, which could be an advantage in clinical use.

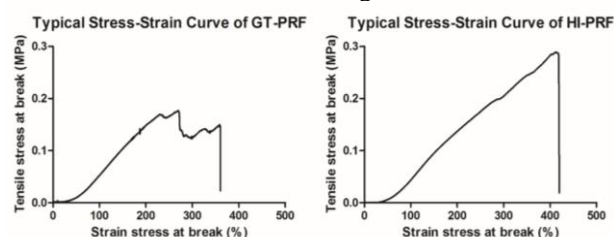
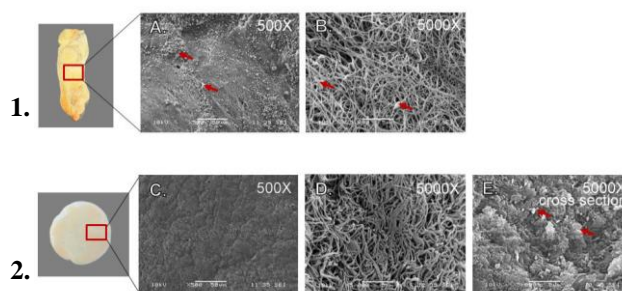


Fig. 2. Typical Stress-Strain Curve of PRF membranes



1. Electron microscopy image of PRF membranes

Platelets are located mostly on the surface of GT-PRF, however they are located only inside of HI-PRF.

CONCLUSION

The hypACT device ensures an easy, fast, and sterile method to isolate PRF membrane from autologous blood. This membrane has the same excellent biological properties as the traditional one.

REFERENCES

1. Patel GK. *et al.*, J. Periodontol. 1192-1199, 2017

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