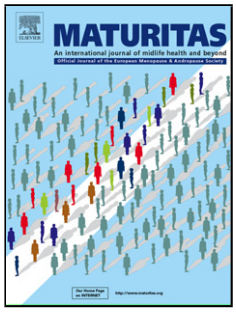

Title: Effects of Platelet-Rich Plasma and Platelet-Poor Plasma on Human Dermal Fibroblasts

Authors: Jeannie Devereaux, Kulmira Nurgali, Dimitrios Kiatos, Samy Sakkal, Vasso Apostolopoulos

PII: S0378-5122(18)30504-8
DOI: https://doi.org/10.1016/j.maturitas.2018.09.001
Reference: MAT 7061

To appear in: *Maturitas*

Received date: 31-7-2018
Revised date: 2-9-2018
Accepted date: 7-9-2018

Please cite this article as: Devereaux J, Nurgali K, Kiatos D, Sakkal S, Apostolopoulos V, Effects of Platelet-Rich Plasma and Platelet-Poor Plasma on Human Dermal Fibroblasts, *Maturitas* (2018), https://doi.org/10.1016/j.maturitas.2018.09.001

Effects of Platelet-Rich Plasma and Platelet-Poor Plasma on Human Dermal Fibroblasts

Jeannie Devereaux[a,*], Kulmira Nurgali[b,c], Dimitrios Kiatos[a], Samy Sakkal[b], Vasso Apostolopoulos[b,*]

[a] College of Health and Biomedicine, Victoria University, Melbourne, VIC, Australia
[b] Institute for Health and Sport, Victoria University, Melbourne, VIC, Australia
[c] Department of Medicine, The University of Melbourne, Regenerative Medicine and Stem Cells Program, Australian Institute of Musculoskeletal Science (AIMSS), Melbourne, VIC, Australia

* Corresponding authors.
Email addresses: vasso.apostolopoulos@vu.edu.au (V. Apostolopoulos)
jeannie.devereaux@live.vu.edu.au (J. Devereaux)

Highlights

- Platelet-rich plasma (PRP) improves non-healing wounds.
- Platelet-rich plasma improves collagen regeneration.
- Platelet-rich plasma improves fibroblast proliferation.
- Platelet-rich plasma increases the tensile strength of tissues.
- Platelet-rich plasma is also rich in leucocytes, hence could be termed leucocyte-rich platelet-rich plasma.

ABSTRACT

Platelet-rich plasma is an autologous and safe blood product containing a high concentration of platelets and leucocytes. Platelets, growth factors, leucocytes and plasma are fundamental fibroblast proliferation agents. Leucocytes' plasticity, reparative qualities, cross-talk between cells and capacity to orchestrate diverse outcomes are receiving considerable research attention. Fibroblasts are able to migrate and proliferate into the tissue surrounding a wound and subsequently deposit granulation tissue, which minimises scarring. Fibroblasts also have anti-ageing benefits. Elucidation of the role of leucocytes in tissue repair has led to a new approach to tissue regeneration and the formation of a new therapeutic modality, namely immuno-regenerative medicine.

Keywords:
Leucocyte-Rich Platelet-Rich Plasma
Platelet-Rich Plasma
PRP
Platelet-Poor Plasma
Platelet Gel
Platelet-Rich Fibrin
Fibroblasts
Regenerative medicine