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Critique *in vitro* analysis of platelet concentration effect on cells involved in *in vivo* wound healing

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Over time the role of platelet derivatives (firstly Platelet Rich Plasma and Platelet Gel) in wound healing processes has become more clear; its clinical use has been investigated for several pathologies, ranging from chronic skin and soft tissue ulcerations treatments to several surgical applications (oral-, maxillofacial-, orthopedic and trauma-, plastic-surgery). Despite this, their use has progressed in an “empirical” fashion, only sustained by individual doctors’ experiences but not by experimental data. Thus, the need of strict *in vitro* experiments to possibly identify the parameters that should be used in clinical applications to obtain satisfactory results in wound healing. In our opinion, among more useful parameters, the concentration of platelet seems to be very important even if it is, usually, ignored. That being so, our purpose was to evaluate the *in vitro* effect of different platelet concentrations on biological processes used by cells during the *in vivo* wound healing. Several cell types were assessed, taking into account their role during wound healing processes; pro-angiogenic response was analyzed in human endothelial cells treated with increasing concentrations of platelet per microliter, and ability to restore extracellular matrix lost after tissue damage was evaluated in human fibroblasts and human tenocytes subjected to the same treatments. For all cell lines assessed, our data highlighted that exists a specific optimal concentration for each process and each cell but, in any case, excessively high concentrations (over 1.500.000 platelet/ μ l) have an inhibitory effect on the wound healing processes and could be, therefore, counterproductive in clinical applications.

Biography

Vincenza Dolo has completed his PhD in Cellular Biology from Palermo University and postdoctoral studies from L'Aquila University School of Medicine. She is the Director of Post-graduate School of Clinical Pathology, and Chairman of Master Degree in Health Professions Sciences. She has published more than 67 papers in reputed journals.

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