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Platelet-rich plasma : Growth factor enhancement for bone grafts

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Abstract

Platelet-rich plasma is an autologous source of platelet-derived growth factor and transforming growth factor beta that is obtained by sequestering and concentrating platelets by gradient density centrifugation. This technique produced a concentration of human platelets of 338% and identified platelet-derived growth factor and transforming growth factor beta within them. Monoclonal antibody assessment of cancellous cellular marrow grafts demonstrated cells that were capable of responding to the growth factors by bearing cell membrane receptors. The additional amounts of these growth factors obtained by adding platelet-rich plasma to grafts evidenced a radiographic maturation rate 1.62 to 2.16 times that of grafts without platelet-rich plasma. As assessed by histomorphometry, there was also a greater bone density in grafts in which platelet-rich plasma was added (74.0% ± 11%) than in grafts in which platelet-rich plasma was not added (55.1% ± 8%; $p = 0.005$).