

# Rationale of Platelet Gel to Augment Adaptive Remodeling of the Injured Heart

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**Abstract:** Cardiac pathologic events including; myocardial infarction, viral infection and hypertrophy, and aging, may trigger maladaptive remodeling of the myocardium. Maladaptive remodeling results in diastolic and systolic dysfunction, myocyte loss, and malformation of the extracellular matrix. It is proposed that platelet gel applied to the site of myocardial injury may provide the proper cytokines, growth factors, and chemokines to promote adaptive remodeling. The hypothesis is that platelet gel concentrates may provide a temporary and local hyperphysiologic concentration of platelet secretory factors that may initiate adaptive myocardial healing. Autologous platelet gel can be

derived from concentrated platelets activated and induced to secrete cytokines, growth factors, and chemokines with an array of stimulating agents. This report discusses selected platelet secretory factors, including; IL-1 $\beta$ , TGF- $\beta$ , TGF- $\alpha$ , FGF, EGF, PDGF, and IGF, which support the concept that platelet concentrates can mediate cardiac wound healing. In conclusion, application of platelet gel to areas of cardiac injury may offer a therapeutic means to stimulate myocyte regeneration, angiogenesis, and restoration of a normal extracellular matrix composition. **Keywords:** remodeling, growth factors, fibroblasts. *JECT. 2004;36:191-196*

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