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Quantification of thrombocyte growth factors in platelet concentrates produced by discontinuous cell separation.

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Platelet concentrates (PC) are increasingly used to increase bone regeneration in pre-prosthetic surgery. Although it is generally appreciated that certain growth factors (PDGF, TGF, EGF, and ECGF) are present in thrombocyte preparations, relatively little is known about these components in quantitative terms.

The study reported here analysed the amounts of growth factors in PC produced under standard conditions from healthy volunteers.

All the blood samples (237 in total) were analysed using Quantikine ELISA kits (R and D). The mean +/- SD platelet count in whole blood from these donors was 262,000+/-58,000/microl, while in PC produced by discontinuous cell separation it was 1.419,000+/-333,000/microl.

The mean growth factor concentrations in PC preparations in ng/ml were as follows: PDGF-AB 125+/-55 ng/ml; TGF-beta1 221+/-92 ng/ml; IGF-I 85+/-25 ng/ml; PDGF-BB 14+/-9 ng/ml; TGF-beta2 0.4+/-0.3 ng/ml.

These growth factor concentrations typically covered a 3-10 fold range: PDGF-AB 29-277ng/ml; PDGF-BB 2-33ng/ml; TGF-beta1 32-397ng/ml; TGF-beta2 0.1-1.2 ng/ml; IGF-I 40-138 ng/ml. Platelet counts in PC were slightly higher for women (Mann-Whitney Test all $p < 0.001$) than for men, while the concentrations of growth factors in PC exhibited no gender-related difference of any statistical significance.

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