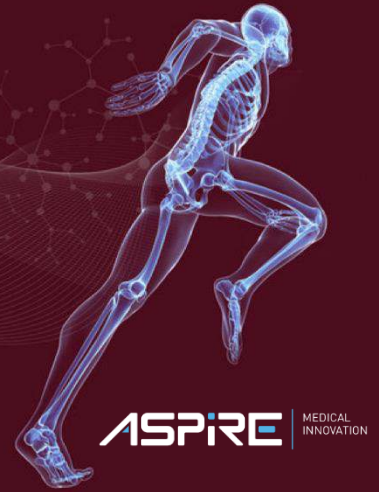


## Optimizing PRP/PC Preparation: Treatment of Degenerative Disc Disease (DDD) – DOSE MATTERS

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### Abstract

#### Background

Autologous Platelet Rich Plasma (PRP) injections represent an emerging therapy for the treatment of degenerative disc disease. Platelet Concentrate (PC) injections represent a rich source of a variety of growth factors (PDGF, TGF-beta, IGF) that can promote healing in the disc. Additionally, cytokines (IL-1Ra, IL-10) can regulate the immune response in the disc. There are a variety of Point of Care (POC) Systems on the market designed to produce PRP or PC. Direct comparisons are lacking regarding their ability to effectively increase platelet levels beyond baseline blood levels. Identifying the optimal PRP/PC System for concentrating platelets should facilitate correlating patient outcome improvement by potentially delivering a higher dose of beneficial growth factors and cytokines to the site of injury.

#### Methods

Whole blood from 35 patients was processed using two different PRP/PC centrifuge-based preparation systems (EMCYTE 60ml PurePRP II Kit and CERVOS KEYPRP 80ml Kit). The blood was processed according to the manufacturer's Instruction for Use (IFU) recommendations. The final concentration volume was 2,5mL. Both the whole blood and the processed PRP/PC samples were analyzed using a standardized hemocytometer to determine the number of platelets and nucleated cells at baseline and in the final product.

#### Results

The 2,5mL PRP/PC samples prepared using the CERVOS KEYPRP Kit contained an average platelet dose (PLT=  $7.21 \times 10^9$ ). This dose was significantly higher than the average dose found in the 2,5mL PRP/PC samples prepared using the EMCYTE Kit (PLT=  $5.73 \times 10^9$ )  $p = 0.0230$ . The dose generated using the CERVOS KEYPRP Kit represented a 16.2-fold average increase in platelet concentration over the baseline blood concentration. This increase was significantly higher than the 12.3-fold average increase over baseline that was seen using the EMCYTE Kit  $p = 0.0241$ .

#### Conclusions

In a direct head-to-head comparison using blood drawn from the same patients, the CERVOS KEYPRP System was able to concentrate platelets at a significantly higher level than the EMCYTE PurePRP II System. The protocol used for both system kits involved the production of a Leukocyte Rich PRP/PC biologic dose. The number of leukocytes in the final PRP product was not significantly different between the two production methods.