Tropocells PRP - Frequently Asked Questions

1. Is Tropocells PRP Leukocyte-Rich or Leukocyte-Poor?

Tropocells PRP is technically leukocyte poor (lower than normal neutrophil count), but also contains the benefits of leukocyte-rich (higher than normal monocyte and lymphocyte count) PRP. **It is the only system to commercially offer monocyte-rich/neutrophil-poor PRP.**

LP-PRP is better than LR-PRP in joints because RBCs and neutrophils are toxic to cartilage cells.

LR-PRP is better than LP-PRP in tendons and bone because mononuclear cells (monocytes and lymphocytes) stimulate the Growth Factors responsible for tendon and bone proliferation.

Tropocells provides the benefits of both leukocyte poor and leukocyte rich PRP for the ideal treatment of all tissue types with one system. The positive/anabolic response comes from monocytes regardless of tissue type and Tropocells separates out all (catabolic) neutrophils.

2. Don't you need inflammation to trigger the desired healing response?

No. The four phases of healing are hemostasis, inflammation, proliferation and maturation. Most are taught that healing may not occur if any of these four phases are disrupted. PRP treatment is designed to restart the phases of healing.

The inflammatory phase of healing serves three purposes - destroys bacteria (neutrophils), remove debris (monocytes/macrophages) and recruits MSCs into the injured area (platelets - by means of growth factor release, monocytes and lymphocytes).

Platelets release growth factors to signal recruitment; depending on the microenvironment. There is pro-inflammatory recruitment if neutrophils are present. There is anti-inflammatory recruitment if monocytes are present.

The opinion that inflammation is necessary for a healing response originates from the long-held belief that healing occurs in four phases and all four phases must occur for complete healing. Inflammation is the second phase, after hemostasis. It was originally thought that inflammation was necessary to accomplish three tasks--destroy bacteria (neutrophils), remove debris (monocytes/macrophages), and recruit MSCs into the area (all WBCs, PDGF, SDF-1A). However, research in the past decade has shown that the last task--recruitment of MSCs can be accomplished without inflammation. Recruitment is signaled by the following GFs, many of which have an anti-inflammatory effect: PDGF, TGF, VEGF, EGF, SDF, FGF, IGF, PF-4

This belief (that inflammation is necessary for a healing response) is also supported by a few studies that looked at various PRP systems and compared their formulations to their growth factor spikes that they cause. In some gel barrier systems, there was a far less response than the buffy coat systems. This led them to believe that the RBCs and neutrophils (and thereby the inflammation phase) are necessary to trigger a response.

The Kushida 2014 Study challenges that idea. In this study, a gel-barrier PRP system (Selphyl - precursor to Cascade) failed to generate a response like the other buffy coat systems. But unlike Selphyl, Mycells (another gel-barrier system - now Tropocells) did produce a spike as large as the buffy-coat systems without the RBCs and the inflammation. After this study, the triggered response is now thought to require a minimum platelet dose, not an inflammatory effect.

3. Don't gel-barrier systems produce platelet-poor plasma?

Sometimes, but not with Tropocells (where you don't have to draw more blood to stimulate a healing response). Platelets and monocytes rest directly above the barrier. They are resuspended and collected during the preparation process.

Neutrophils, cells that are harmful to the reparative environment, and inflammatory red blood cells remain trapped beneath the gel barrier.

4. What is the platelet concentration of Tropocells?

Platelet dose is more important than platelet concentration.

Most will use the 11ml tube which will yield 6ml of plasma. The concentration is 1.6 billion platelets, but can be customized for specific applications.

It's typical to take 3ml of PPP off of the top of the tube (platelets are concentrated at the bottom) leaving a 2.67x concentration. Taking 5ml off of the top will yield an 8x concentration.

5. My PRP releases a higher concentration of growth factors.

Timing of growth factor release is more important than growth factor spike. Plus, the Kushida 2014 Study shows that MyCells (precursor to Tropocells) produces the same growth factor spike as do buffy coat systems.

6. Acidic PRP gives you more growth factors.

The ideal zone to promote the natural release of growth factors is the body's physiologic pH of 7.4.

7. Why don't you activate your PRP before injection? You can get more growth factor release.

Injecting inactive PRP regardless of tissue type allow collagen to slowly activate platelets over time resulting in a slow release of growth factors similar to the natural healing process.

8. Gel-barrier PRP systems shouldn't even be called PRP because they don't concentrate platelets.

The Kushida 2014 Study shows where MyCells offers a similar platelet concentration and growth factor spike to buffy coat systems but has less inhibitory red blood cells.

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