

PRP: AN EFFECTIVE BIOACTIVE THERAPY

Platelet-Rich Plasma (PRP) is a biological product obtained from the patient own blood (autologous) which contains a platelet concentration above normal basal value. Platelets and plasma of PRP contain a great amount of growth factors and other biomolecules that activate and accelerate the processes of repair and regeneration of tissues where they are administered.



EXPECTED EFFECTS

1. ANTI-INFLAMMATORY

Blocks the production of inflammatory cytokines while promotes the synthesis of anti-inflammatory cytokines.^{1,2}

2. REGENERATIVE

Induces stem cells chemotaxis and proliferation in the area of application, replacing the damaged cells and stimulating extracellular matrix production.^{3,4}

3. ANGIOGENIC

Promotes neovascularization in injured and fibrotic tissues.⁵

4. ANALGESIC

Induces a cell-based endocannabinoid response in inflammatory conditions, decreasing pain.⁶

5. HOMEOSTATIC

Positively modifies cellular metabolism activating anabolic pathways for formation of new tissues, while also inhibiting its degradation². Reduces the coefficient of joint friction by stimulating the endogenous production of HA.^{7,8}

6. BACTERIOSTATIC

It slows the growth of bacteria and decreases the possibility of infections.⁹

BIBLIOGRAPHY: 1. Andia et al. Nat Rev Rheumatol. 2013; (12):721-30. 2. Moussa et al. Exp Cell Res. 2017; 352(1):146-156. 3. Sciafani et al. Arch Facial Plast Surg. 2012 ;14(2):132-6. 4. Schär MO et al. Clin Orthop Relat Res. 2015; 473(5):1635-43. 5. Kakudo et al. Med Mol Morphol. 2014; 47(2):83-9. 6. Descalzi et al. Tissue Eng Part A. 2013; 19(19-20):2120-9. 7. Sundman et al. AJSM. 2014; 42(1):35-41. 8. Sakata et al. AJMS. 2015; 43(6):1467-73. 9. Li et al. J Vis Exp 2013; 9(74). 10. Dai et al. Arthroscopy. 2017; 33(3):659-670. 11. Shen et al. J Orthop Surg Res. 2017; 23:12(1):16. 12. Chen et al. AJSM. 2017. 13. Ghaffaripasand F et al. Bull Emerg Trauma. 2016; 4(3):134-40. 14. Magalon et al. BMJ Open Sport Exerc Med. 2016; 4(2(1):e000060

Hy^Δtissue[®] PRP



APPLICATIONS^{10,11,12,13}

1. OUTPATIENT

- CHRONIC:

- **Osteoarthritis:**
 - II, III - intra-articular (IA) PRP.
 - III, IV - intraosseous & IA PRP.
- **Tendinopathies (enthesitis or tear)**
- Plantar fasciitis, degenerative meniscal tear, post-menisectomy syndrome, degenerative disc disease, fibrotic and painful scars.

- ACUTE

- Muscle, tendon and ligament tears.

2. SURGICAL

- As adjuvant in tendon, ligament & meniscal suture.
- Avascular necrosis & pseudoarthrosis.



RECOMMENDATIONS

- 1 Use a Very Pure PRP.
- 2 If a lower volume of PRP is required, use the PRP closer to the red fraction (more concentrated). To increase the volume of PRP to be injected, add PPP.
- 3 Perform image guided injection of PRP.
- 4 Do multiple PRP sessions with short-time intervals.
- 5 Preferably, do not take NSAIDs or corticosteroids 7 days before the PRP treatment.
- 6 Do not mix PRP with other injectable medications (anti-inflammatories or anesthetics).
- 7 Restrict food intake before PRP treatment.
- 8 Do not use hemolyzed PRP.
- 9 Perform PRP quality control systematically.

MUSCULOSKELETAL APPLICATIONS

Hy^Δtissue[®] PRP

PLATELET-RICH PLASMA CONCENTRATION SYSTEM



HYTISSE-PRP-FC-MSK-EN-A-(MAY 2020)



A UNIQUE TECHNOLOGY

Hy-tissue® PRP is a medical device that produces PRP for musculoskeletal applications.

USER-FRIENDLY

- ✓ **SAFE**
Closed and single-use system.
- ✓ **SIMPLE**
Easy to use & simple step by step.
- ✓ **VERSATILE**
2 kits available to meet all needs, either in the outpatient or in OR.

CELL-FRIENDLY



Devices made of anti-electrostatic medical grade polymer with a nano-polished and coated surface to **prevent platelets adhesion**, which **increase platelet recovery**.

Exclusive soft centrifugation technology that **optimizes the platelets** and cells separation and concentration, preserving their **integrity and viability**.

Laminar flow selection system that allows precise **PRP selection** directly **from the tube to the application syringe** without platelet activation.

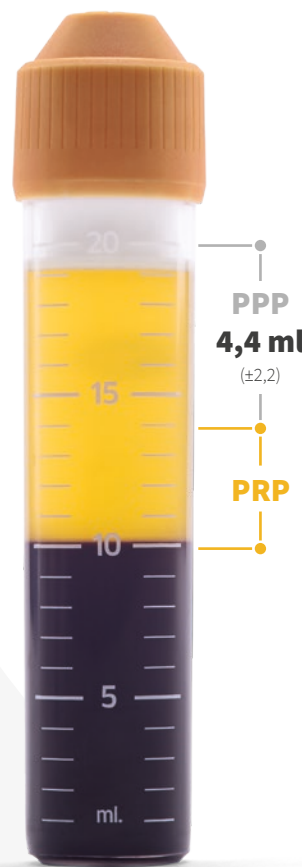


PRODUCES A UNIQUE PRP

- 1 Customized **PURITY**: VERY PURE PRP¹⁴ or LR-PRP if required.
- 2 Customized **VOLUME**: up to 10ml.
- 3 Reproducible **PRP QUALITY**, always.

Hy-tissue® PRP

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QUALITY	
PRP Vol.	4ml
PLT (10 ⁹ /ml)	580 (SD 199)
WBC (10 ⁹ /ml)	1,6 (SD 1,0)
RBC (10 ⁹ /ml)	0,01 (SD 0,01)

VERY PURE PRP
Up to 2,9x

RELATIVE COMPOSITION	
PLT	97,0%
WBC	0,2%
RBC	2,8%

- **To obtain a LR-PRP** collect the PRP plus 1ml of buffy-coat (WBC≤11x10⁶/ml and RBC≤795x10⁹/ml).
- **PRP volume is fixed**: Hy-tissue® PRP 20: 4ml / Hy-tissue® PRP 50: 10ml.
- **PPP volume varies** with the hematocrit. Its concentration of PLT is lower than in PRP, but higher than blood (a poor PRP).
- Qualitative variation of PRP depends on intrinsic and individual factors.

Hy-tissue® PRP

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QUALITY	
PRP Vol.	10ml
PLT (10 ⁹ /ml)	450 (SD 128)
WBC (10 ⁹ /ml)	0,9 (SD 0,4)
RBC (10 ⁹ /ml)	0,01 (SD 0,01)

VERY PURE PRP
Up to 2,3x

RELATIVE COMPOSITION	
PLT	96,7%
WBC	0,1%
RBC	3,2%

All technical data are available in the Hy-tissue® PRP monography (upon request).

LEGEND: HA: Hyaluronic Acid. LR-PRP: Leuco-Rich PRP. PLT: Platelets. PPP: Plasma less-concentrated in Platelets than PRP. PRP: Platelet-Rich Plasma. RBC: Red Blood Cells. SD: Standard Deviation. WBC: White Blood Cells. OR: Operative room. NSAIDs: Non-Steroidal Anti-inflammatory Drugs.

