CELLULAR MATRIX®

The exclusive **PRP & HA technology**

Breaking the vicious circle of knee osteoarthritis

regenlab® ™ TISSUE ENGINEERING SPECIALISTS

RegenLab® is a leading innovator of medical products for the preparation of platelet-rich plasma (PRP).

RegenLab® provides expertly designed & patented Medical Devices for platelet-rich plasma preparations, CE certified and registered by most national agencies worldwide.

RegenLab® remains committed to providing products of the highest quality and safety, as well as protecting customers through enforcement of its intellectual property rights.

Cellular Matrix technology combines the complementary clinical effects of RegenPRP™ and hyaluronic acid (HA), giving better and longer-lasting results in patients with OA[1].

Cellular Matrix A-CP-HA

Cellular Matrix tubes allow the preparation of autologous platelet-rich plasma with a standardised composition (RegenPRP™) combined with a non-cross linked hyaluronic acid gel (HA) in a closed-circuit system.

1. Abate M. et al. Efficacy and safety profile of a compound composed of platelet-rich plasma and hyaluronic acid in the treatment for knee osteoarthritis (preliminary results). Eur J Orthop Surg Traumatol 2015 Dec;25(8):1321-6.

1/ What is RegenPRP™ ?

RegenPRP™: the standardised leucocyte-reduced platelet concentrate prepared with RegenLab® technology that provides an autologous reservoir of growth factors.

1.1 - PLATELETS

In addition to their role in haemostasis, platelets are key factors in tissue repair mechanisms.[2] They provide essential growth factors, such as FGF, PDGF, TGF-β, EGF, VEGF, IGF, which are involved in stem cell migration, differentiation and proliferation. Platelet growth factors also stimulate fibroblasts and endothelial cells to induce the deposition of new extracellular matrix and neo-vascularisation, respectively.

1.2 - PLASMA

Plasma contains many factors essential for cell survival including nutrients, vitamins, hormones, electrolytes, growth factors (such as IGF and HGF), and proteins. Among the plasma proteins, the molecules involved in the coagulation process allow the formation of the fibrin polymer that serves as a scaffold for cell migration and new tissue generation.[3]

1.3 - PLATELET-RICH PLASMA (PRP)

- Proven efficacy in tissue healing, with key roles in cell migration, proliferation and differentiation
- Mechanism of action comprises anti-inflammatory activity and induction of cell-signalling cascades
- Key role in the synthesis of new extracellular matrix for tissue regeneration
- Growing body of evidence to support PRP as a treatment for osteoarthritis (OA)[4]

	Blood sample vol per tube	PRP vol per tube	Platelet recovery	Granulocyte depletion	Red blood cell depletion
A-CP-HA Device Properties	6 ml	~3 ml of PRP combined with 2 ml of HA	> 70 %	94.3 %	99.5%

A-CP-HA performance summary-v7ml, data on file

The volume of blood that is drawn using the A-CP-HA tube is 6 ml, allowing the preparation of a final combination of 60% PRP – 40% HA in a volume of around 5 ml.

2. Fountain, J. H. and S. L. Lappin (2019). Physiology, Platelet, StatPearls Publishing, Treasure Island (FL).
3. Mathew, J. and M. Varacallo (2019). Physiology, Blood Plasma, StatPearls Publishing, Treasure Island (FL).
4. Oeding, J. F., N. H. Varady, F. W. Fearington, A. Pareek, S. M. Strickland, B. U. Nwachukwu, C. L. Camp and A. J. Krych (2024). «Platelet-Rich Plasma Versus Alternative Injections for Osteoarthritis of the Knee: A Systematic Review and Statistical Fragility Index-Based Meta-analysis of Randomized Controlled Trials.» Am J Sports Med: 3635465231224463

2/ Cellular Matrix technology: RegenPRP™ in combination with HA

Hyaluronic acid is a major component of synovial fluid contributing to joint homeostasis.

• 25 years of clinical experience shows pain relief and functional improvement lasting 6 to 12 months in OA patients.

• Plays a major role in viscosupplementation and pain relief in OA.[5]

• The network of HA chains generates an ideal cell-friendly matrix when combined with PRP.[6]

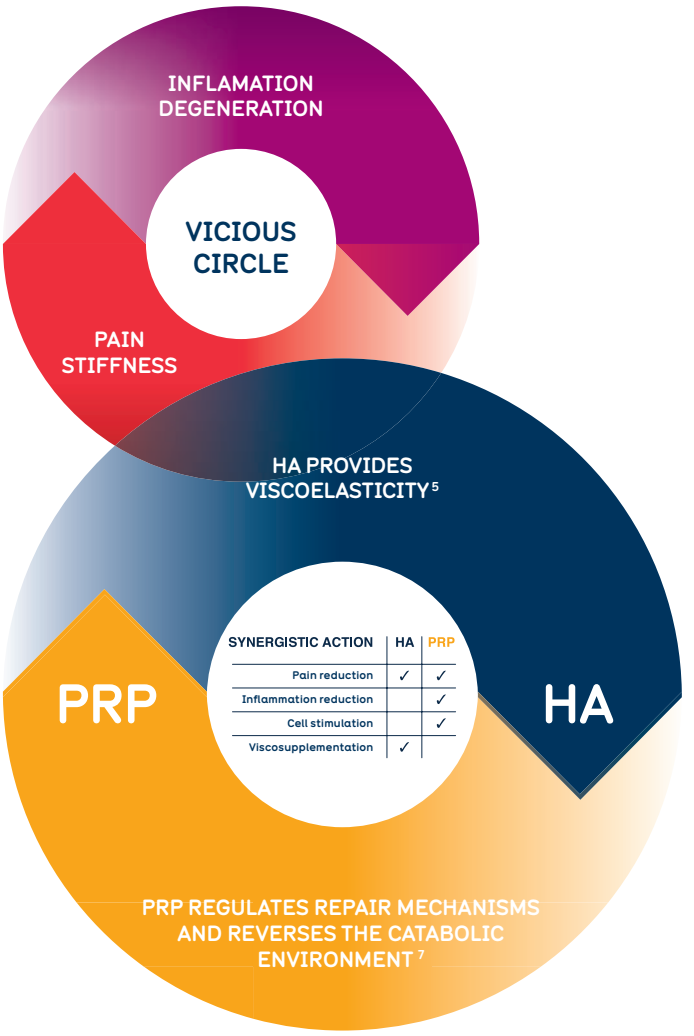
Hyaluronic acid improves the activity of several molecules contained in platelet-rich plasma to provide additional benefits to OA patients.[1]

Both PRP and HA have been extensively used not only to reduce clinical symptoms, but also to slow down OA progression.[5,7]

When PRP and HA are used in combination these effects are enhanced and prolonged. HA creates a bioactive scaffold in which the platelets progressively release their growth factors. RegenPRP™ does not negatively affect the mechanical, elastic or viscous properties of HA.[1]

Cellular Matrix is a unique, regulatory approved, patented technology that allows the safe, closed-circuit preparation of a cell-friendly PRP-HA network in which platelets and plasma components are retained.

Cellular Matrix has an excellent safety profile in clinical practice.[1,8,9]



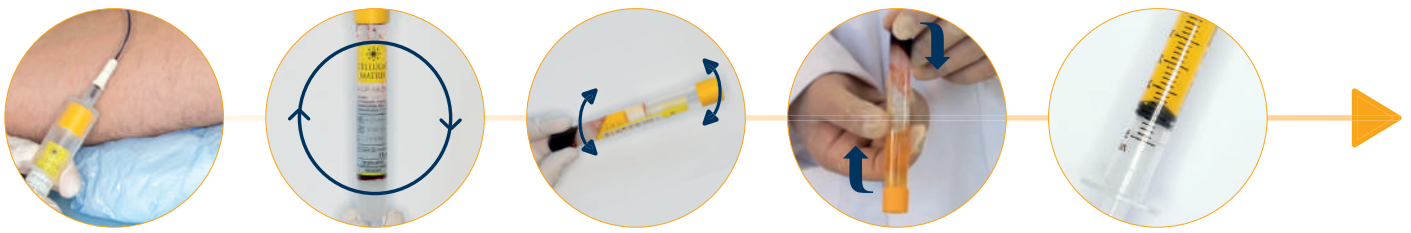
SYNERGISTIC ACTION	HA	PRP
Pain reduction	✓	✓
Inflammation reduction		✓
Cell stimulation		✓
Viscosupplementation	✓	

Blood withdrawal accessories are supplied separately in the Accessory Set (ref.: BCA-SET-3).

5. Huskisson, E. C., and S. Donnelly. «Hyaluronic Acid in the Treatment of Osteoarthritis of the Knee.» [In eng]. Rheumatology (Oxford) 38, no. 7 (Jul 1999): 602-7.
6. Smith J.D. et al. Improved growth factor directed vascularisation into fibrin constructs through inclusion of additional extracellular molecules. Microvasc Res. 2007;73(2):84-94.
7. Chen CPC, Cheng CH, Hsu CC, Lin HC, Tsai YR, Chen JL. The influence of platelet rich plasma on synovial fluid volumes, protein concentrations, and severity of pain in patients with knee osteoarthritis. Experimental gerontology 2017;93:68-72.

3/ Technology Platform for Standardised Autologous Regenerative Medicine

The simple, safe, and efficient point of care preparation of autologous leucocyte-reduced platelet-rich plasma.



Blood Collection | Centrifugation | Resuspension | Resuspended | Ready to Use

3.1 - TECHNOLOGY ADVANTAGES

- User-independent standardised preparation
- Minimum volume of blood required
- Safe closed-circuit system
- Mechanical separation of PRP using a chemically inert separator gel with a single centrifugation at a relative centrifugal force of 1500 x g
- Pharmaceutical grade solution of sodium citrate allowing a reversible anticoagulation
- Minimal learning curve and ease of use
- Operationally and clinically efficient process
- Facilitates and streamlines routine practice.

3.2 - BIOLOGICAL ADVANTAGES

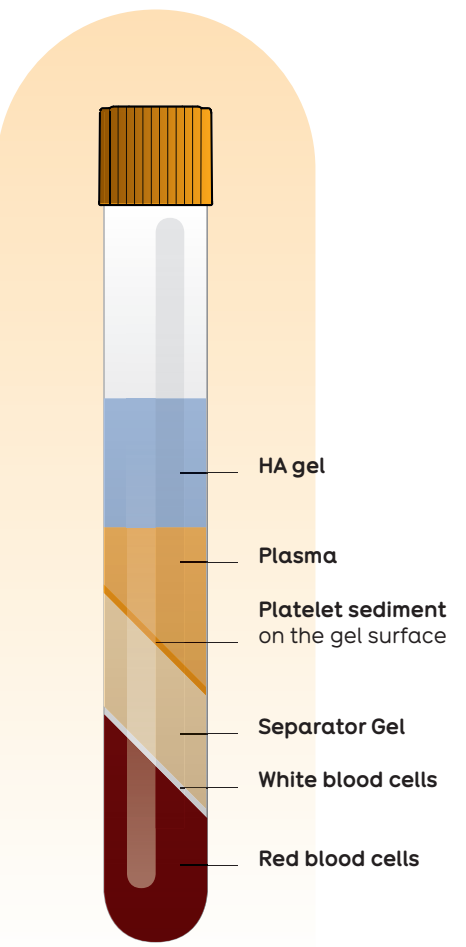
- RegenPRP™ is standardised, leucocyte reduced and easily reproducible. RegenLab® specific separating gel technology guarantees minimal variability
- Platelet recovery > 70%
- High platelet quality. Viable & functional platelets
- Full plasma recovery. No loss of plasma growth factors and fibrinogen
- Leucocyte-reduced PRP. Specific depletion of pro-inflammatory granulocytes, leaving mainly lymphocytes and monocytes
- Virtually no red blood cells

3.3 - SCIENTIFIC ADVANTAGES OF REGENPRP™

- Demonstrated safety and efficacy
- Evidence-based outcomes for numerous therapeutic indications
- Large number of clinical studies, with over 200 publications.

3.4 - CELLULAR MATRIX PLATFORM

- Certified technology for the preparation of RegenPRP™ combined with hyaluronic acid (HA)
- Contains 2 ml of non-crosslinked HA gel at a concentration of 20 mg/ml (40 mg total)
- HA produced by bacterial fermentation, thus free of animal proteins.



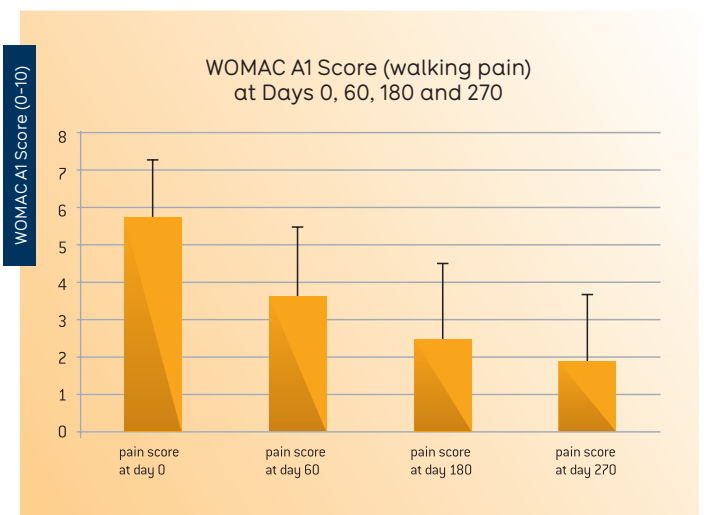
4/ Clinical Evidence

4.1 - REGENPRP™-HA COMBINATION FOR KNEE OA: RENEVIER 2018 [8]

The RegenPRP™-HA combination prepared with Cellular Matrix provided significant pain relief and functional improvement.[8]

A prospective multicenter study was performed in patients with knee joint OA who did not respond to treatment with HA alone. Patients received 3 injections of the RegenPRP™-HA combination prepared with Cellular Matrix, at day 0, 60 and 180.

- Number of patients: 77 (83 knees)
- Average age: 63
- Kellgren and Lawrence Grading Scale: grade II (43.4%) and grade III (56.6%)



RESULTS

- 83.6% of patients were strict responders to treatment with Cellular Matrix based on the OMERACT-OARSI criteria.

- A significant decrease in pain as evaluated by the WOMAC A1 score was observed between day 0 and day 270.

- The treatment provided long-lasting benefits for half of the patients and allowed almost 80% of them to avoid surgery for at least 4 years.

CONCLUSION

This study demonstrated that 3 injections of RegenPRP™-HA combination is a new medical approach for patients who do not respond to treatment with HA alone and offers an alternative to knee surgery.[8]

83.6% success rate in patients who had an unsatisfactory clinical response to previous therapy with HA alone.[8]

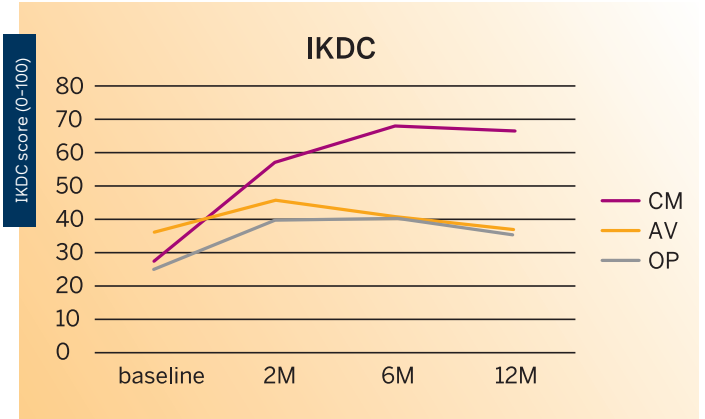
8. Renevier, J. L., et al. «Cellular Matrix PRP-HA": A new treatment option with platelet-rich plasma and hyaluronic acid for patients with osteoarthritis having had an unsatisfactory clinical response to hyaluronic acid alone: Results of a pilot, multicenter French study with long-term follow-up.» Int. J. Clin. Rheumatol. 2018;13(4):230-8

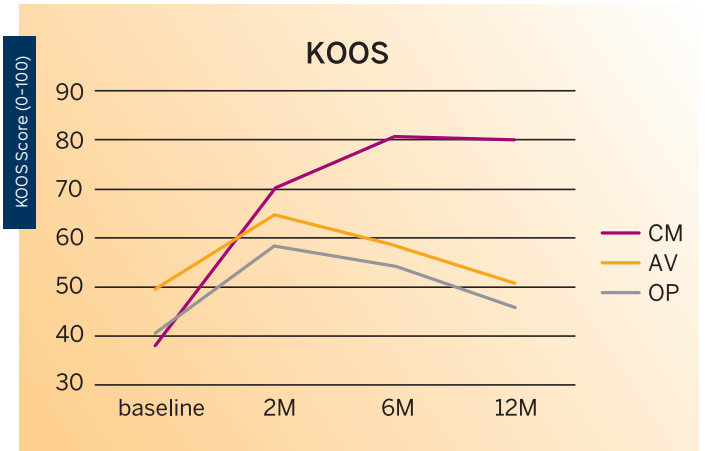
4.2 - REGENPRP™-HA COMBINATION FOR KNEE OA: BARAC 2018 [9]

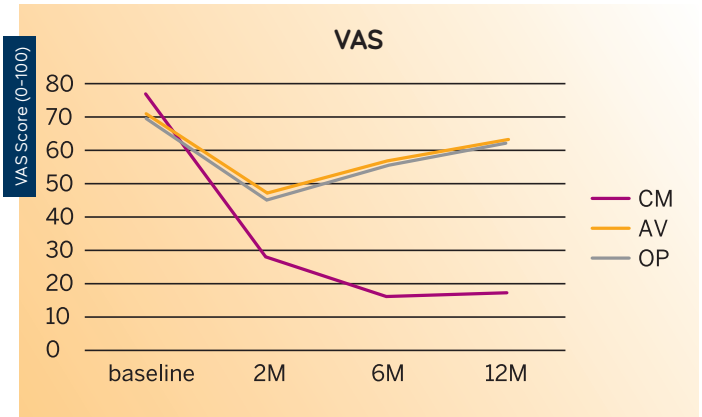
Cellular Matrix technology: a safe, fast and novel treatment approach for knee OA.[9]

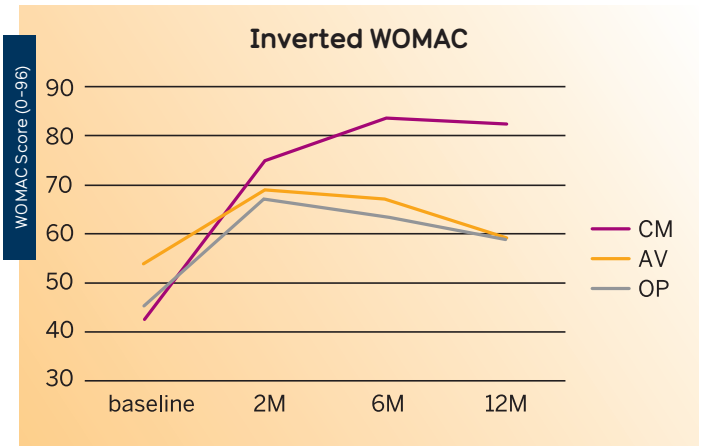
Fifty-three patients (90 knees), aged 39-80 years, suffering from knee osteoarthritis (Kellgren-Lawrence Grade I-III) were enrolled in a prospective randomised controlled clinical study comparing the clinical efficacy of RegenPRP™-HA with two different types of HA: a non-crosslinked sodium hyaluronate (AV) and a non-crosslinked sodium hyaluronate combined with mannitol (OP).

- CM group (19 patients, 30 knees): 3 injections (3 mL RegenPRP™ + 2 mL HA) every 15 days
- AV group (19 patients, 30 knees): a weekly injection of HA (2 mL) for a total of 3 weeks
- OP group (15 patients, 30 knees): a weekly injection of HA + mannitol (2 mL) for a total of 3 weeks.









RESULTS

- Pain and functional outcomes, assessed using the VAS, WOMAC, KOOS and IKDC scores, showed a statistically significant improvement at 2, 6 and 12 months after the last injection compared to baseline values.

- The improvement in the CM group was significantly better compared to the other two groups at 2 months and highly significant ($p<0.01$) at 6 months and 12 months.

- Statistically significant improvement of the cartilage thickness was observed at 2, 6 and 12 months after the end of RegenPRP™-HA treatment on both lateral ($p<0.05$), and medial ($p<0.01$) compartments.

The RegenPRP™-HA combination results in a longer and sustained clinical improvement than HA alone, and thus might be a useful tool for postponing arthroplasty.[9]

9. Barac, B., et al. (The new treatment approach in knee osteoarthritis: Efficacy of cellular matrix combination of platelet rich plasma with hyaluronic acid versus two different types of hyaluronic acid (HA). Int. J. Clin. Rheumatol. 2018;13(5):289-95

ALWAYS READ THE INSTRUCTION BEFORE USE

INTENDED USE OF THE DEVICE
Device used to prepare a combination of hyaluronic acid (HA) and platelet-rich plasma (PRP) for intra-articular injections for symptomatic treatment of pain and mobility improvement in knee osteoarthritis.

Cellular Matrix A-CP-HA Kit

- Ref: A-CP-HA-3
  3 A-CP-HA tubes
- Ref: A-CP-HA-1
  1 A-CP-HA tube

CE 2797

EU-MDR 2017/745

Class III CE certified Medical Devices under Regulation (EU) 2017/745.
Regen Lab SA is an ISO 13485:2016 and MDSAP certified medical device manufacturer

IMPLANT CARD & PATIENT LEAFLET

An implant card will be supplied with the device, one for each A-CP-HA tube.

- **This implant card** is intended to be filled by you with the patient's information after the medical procedure. You shall give this card to the patient, who will keep it for at least 30 days.

- **A patient leaflet** specific to the product is available on RegenLab website, which is intended to provide information to the patient about the implant. When handing over the implant card, please also inform the patient of the leaflet availability on the website **www.regenlab.com**

• ABSOLUTE CONTRAINDICATIONS

- Platelet dysfunction syndrome
- Critical thrombocytopenia
- Hemodynamic instability
- Severe metabolic or systemic disorders
- Septicemia
- Acute/local infection at the site of the procedure
- Patient unwilling to accept risks
- Hypersensitivity to one of the components, including HA

• RELATIVE CONTRAINDICATIONS

- Consistent use of NSAIDs within 48 hours before the procedure
- Consistent use of other medication(s) or dietary supplement(s) which alter platelet function, within 3 days before the procedure
- Corticosteroid injection at the treatment site within 1 month before the procedure
- Systemic use of corticosteroids within 2 weeks before the procedure
- Tobacco use
- Recent fever or illness
- Malignant diseases, especially those affecting blood, bone marrow or bones, and cancers in metastatic phase
- Autoimmune diseases with presence of antibodies and progressive (Hashimoto, rheumatoid arthritis, lupus, etc.)
- Impaired coagulation
- Hemoglobin count < 10g/dl
- Platelet count < 10^5/ µl

• POSSIBLE SIDE EFFECTS

- Possible side effects of blood collection
Blood collection may cause damage to the blood vessels, hematomas, superficial phlebitis, early or late infection and/or temporary or permanent nerve damage that may result in pain or numbness.

- Possible side effects of intra-articular injections
Following intra-articular injections, local secondary inflammatory reactions may occur at the site of injection. This may result in temporary pain, feeling of heat, redness and swelling in the joint area treated with the PRP/HA preparation. Use of ice packs in the minutes following the injection, or oral analgesic treatment (acetaminophen) the day following the injection may reduce these effects. The intake of non-steroidal anti-inflammatory drugs (NSAID) must be avoided. Following injection with HA, there have also been occasional reports of hyper-sensitivity, including, rarely, anaphylaxis. The administration of HA was also reported to provoke pronounced inflammatory reactions. Injection may lead to infection if general precautions for injection and asepsis are not respected.

NB : The above information is only partial. For all information and precautions, please refer to the instructions for use.

Regen Lab France SAS
2 Avenue de Laponie
91940 les Ulis
FRANCE

EC REP

Regen Lab SA
En Budron B2
1052 Le Mont-Sur-Lausanne
SWITZERLAND

T. +41(0)21 864 01 11
F. +41(0)21 864 01 10
www.regenlab.com

MD_ACPHA_OA_ENG_V2411

regenlab® TISSUE ENGINEERING SPECIALISTS