

Condrotide HA

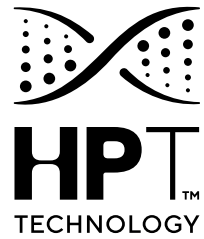
**EVOLVING THE CONVENTIONAL
OA TREATMENT**

**2.5ML POLYNUCLEOTIDES HPT™
2.5ML LINEAR HYALURONIC ACID
AND MANNITOL FOR
INTRA-ARTICULAR INJECTIONS**



From Mastelli's R&D

High Purification Technology



Mastelli's exclusive High Purification Technology is a fully in-house process that enables the production of Polynucleotides HPT™ (PN HPT™)

Condrotide HA is a Class III Medical Device in line with the highest manufacturing and quality standards ^[1]

Mastelli manages the entire production chain, guaranteeing complete control over every stage, from raw material to finished product

1 ORIGIN

- The whole process, from breeding to processing of Salmon Trouts, is carried out in a Certified European Factory

2 EXTRACTION

From the fish farm to the active ingredients:

- Impurities removal
- Polynucleotides HPT™ production

3 PURIFICATION

- Polynucleotides HPT™ purity analysis and release

4 MANUFACTURING

From Polynucleotides HPT™ to Condrotide HA:

- Sterilization
- Quality Control analysis
- Packaging
- Commercialization

Condrotide HA

2.5ml

Evolving the conventional OA treatment

A fluid gel for intra-articular injections containing:



1 PN HPT™

DNA fractions formed by the condensation reaction of monomers called deoxyribonucleotides with a double action at joint level ^[1]



2 LINEAR HA (MW 1.200-1.500 KDa)

Is an intrinsic polysaccharide component of the articular cartilage matrix and synovial fluid ^[3]



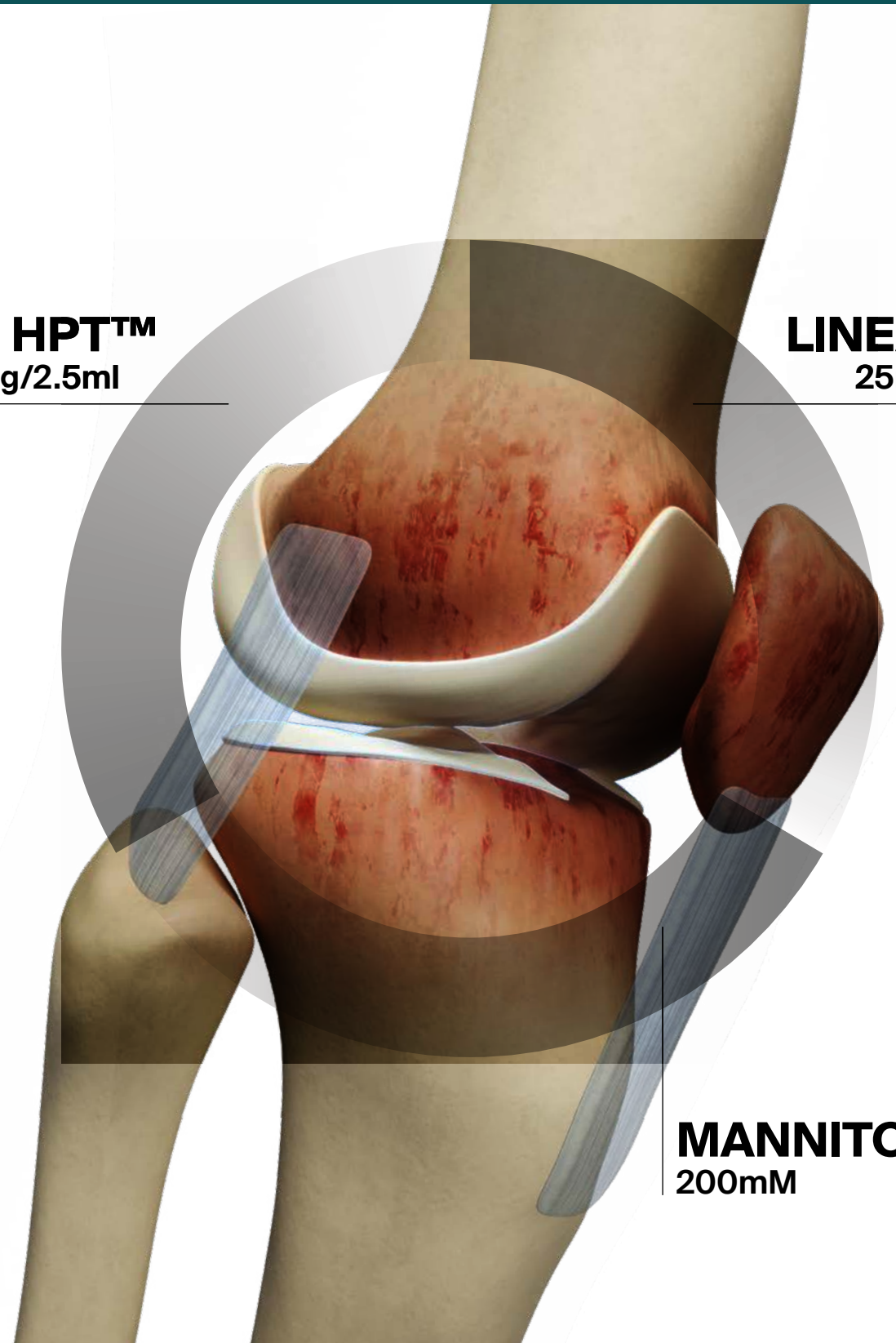
3 MANNITOL

Polyol developing a powerful antioxidant activity by scavenging ROS (Reactive Oxygen Species) at joint level ^[4,5]

PN HPT™
25mg/2.5ml

LINEAR HA
25mg/2.5ml

MANNITOL
200mM



Condrotide HA

2.5ml

An innovative formula with a 3 components - mediated action to relieve joint pain and ensure lasting comfort



POLYNUCLEOTIDES HPT™

The **highly hydrophilic chemical structure** of PN HPT™ enables them to retain a large amount of water and form a 3D gel on joint surfaces

PN HPT™ exert a dual action to support optimal joint function:

1 INITIAL BIOMECHANICAL ACTION ^[2]

- **Deep hydration** of articular surfaces
- **Improvement** of the synovial fluid **rheological properties**
- **Restoring** the **joint mechanical dynamics**

2 RECOVERY OF JOINT PHYSIOLOGY ^[1]

- PN HPT™ **provide energy substrates to the synovial fluid**, contributing to the **restoration of the physiological microenvironment**
- **Pain reduction**

LINEAR HA

(MW 1.200-1.500 KDa)

Obtained from bacterial bio-fermentation acts at the joint level by:

1 VISCOSUPPLEMENTATION

Restores the mechanical and viscoelastic properties of synovial fluid providing an increased lubrication to the joints ^[3]

2 VISCOINDUCTION

Performs a biological action on articular chondrocytes and synoviocytes, stimulating the endogenous production of hyaluronic acid ^[3]

MANNITOL

Due to the scavenging activity:

- Maximize the linear HA action over time ^[4]
- Minimizes HA degradation at the joint level by 34% ^[5]



Condrotide HA

2.5ml

PAIN RELIEF, JOINT FUNCTIONALITY AND MOBILITY IMPROVEMENT ^[1, 7, 8]

Condrotide HA displays a **constant** and **significant pain reduction** with an **earlier** and **longer response** over the **2-years follow-up** compared with Hyaluronic Acid ^[7]
Condrotide HA shows an enhanced improvement in articular functionality compared with a HA ^[7]

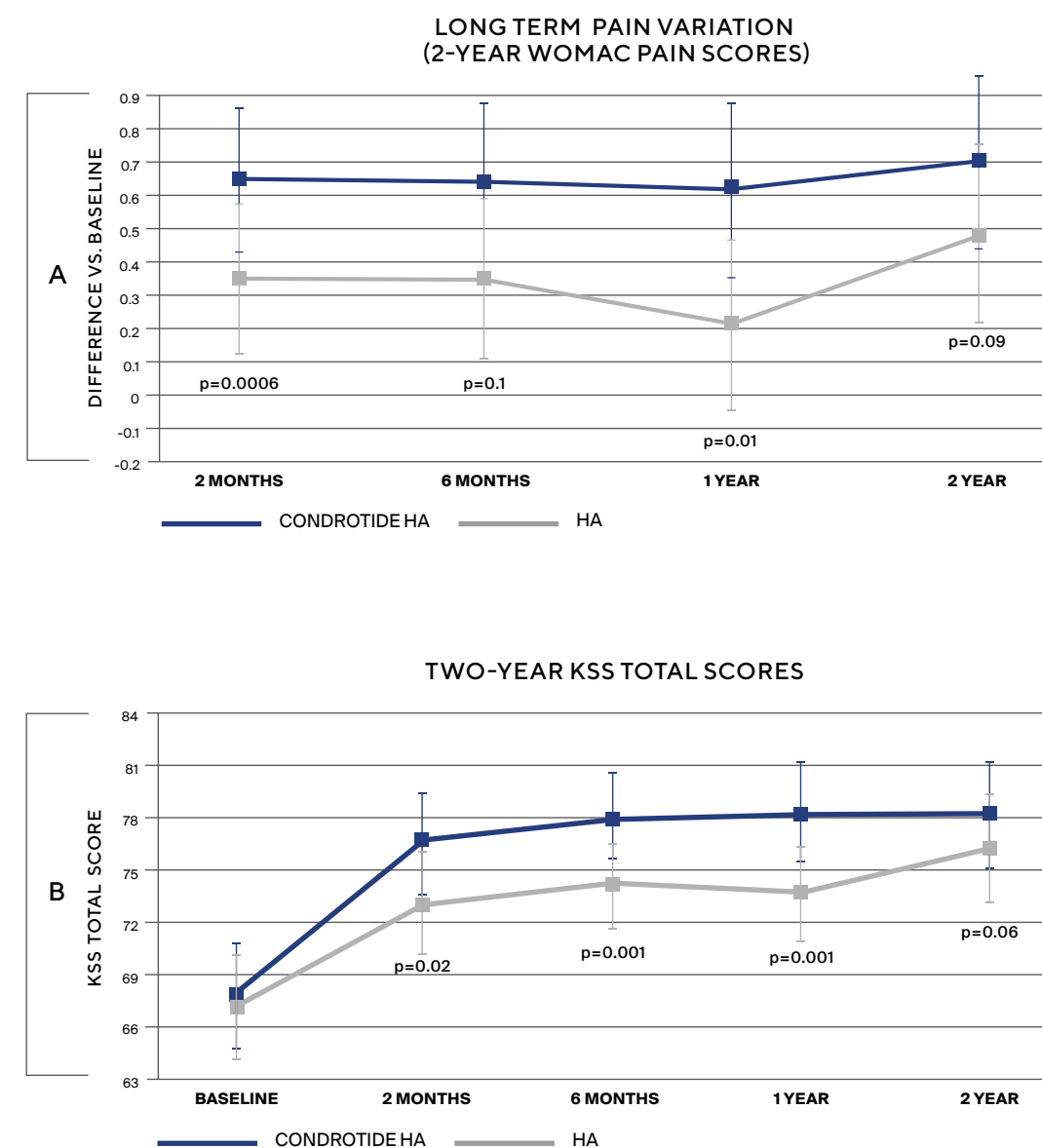


Figure 1. (A) WOMAC (Western Ontario and McMaster Universities Arthritis Index) pain score variation vs. baseline value up to 2 years in 100 patients with gonarthrosis undergoing treatment with Condrotide HA (n=50) vs. Hyaluronic Acid (n=50) (Adapted from ^[7])

Figure 1. (B) Total Knee Society Score (KSS) in 100 patients with gonarthrosis undergoing treatment with Condrotide HA (n=50) vs. Hyaluronic Acid (n=50) (Adapted from ^[7])

Condrotide HA

2.5ml

WHAT IS CONDROTIDE HA?

Condrotide HA is a **Class III Medical Device** for intra-articular use consisting of a **viscoelastic solution** containing **Polynucleotides HPT™**, **Linear HA**, and **Mannitol** ^[1]

TREATMENT GOAL

Condrotide HA is recommended for **painful joint diseases** caused by **degenerative** or **post-traumatic conditions** or by **modification** of a **joint**.

Condrotide HA improves the characteristics of the **synovial fluid**, with a **protective action on the joints** ^[1]

PATIENT TYPE

- Patients with **OA grade II-III Kellgren-Lawrence Scale**
- **Patients with concomitant disorders**

Technical data

Composition: **Polynucleotides HPT™**
25mg/2.5ml
Linear Hyaluronic Acid
25mg/2.5ml
Mannitol

Pack: Luer-Lock 2.5ml non-pyrogenic pre-filled glass syringe

Instruction for use

Condrotide HA must be administered by injecting the solution in the intra-articular space with a sterile needle whose Gauge varies between 18G and 22G, usually being 20G

Treatment protocol

3 injections of 2.5ml in the joint to be treated.
The time interval between each injection is 1-3 weeks

Safety

- High degree of safety and clinical tolerability ^[1]
- Safety tests performed on Raw Material and finished product
- Totally resorbable



BIBLIOGRAPHY

- 1) Kon E. Therapeutic use of Polynucleotides HPT® in osteoarthritis: The weight of evidence. 2025. Current Therapeutics, Springer Healthcare.18(3), 2035-236
- 2) Vanelli R. et al. Efficacy of intra-articular polynucleotides in the treatment of knee osteoarthritis: a randomized, double-blind clinical trial. Knee Surg. Sports Traumatol Arthrosc. 2010; 18:901-907
- 3) Abatangelo G. et al. Hyaluronic Acid: Redefining Its Role. Cells. 2020; 9(7):1743
- 4) Mendoza G. et al. Inhibitory effects of different antioxidants on hyaluronan depolymerization. Carbohydr Res. 2007; 342 (1): 96-102
- 5) Conrozier T. et al. Mannitol Preserves the Viscoelastic Properties of Hyaluronic Acid in an In Vitro Model of Oxidative Stress. Rheumatol Ther. 2014; 1 (1): 45-54
- 6) Torrero JI. et al. New developments in the treatment of osteoarthritis- focus on biologic agents. Open Access Rheumatol. 2015; 7: 33-43
- 7) Stagni et al. Randomised, double-blind comparison of a fixed co-formulation of intra-articular polynucleotides and hyaluronic acid versus hyaluronic acid alone in the treatment of knee osteoarthritis: two-year follow-up. BMC Musculoskeletal Disorders. 2021; 22:773
- 8) Dallari D. et al. Efficacy of Intra-articular Polynucleotides Associated With Hyaluronic Acid Versus Hyaluronic Acid Alone in the Treatment of Knee Osteoarthritis: A Randomized, Double-Blind, Controlled Clinical Trial.
- 9) Condrotide® HA IFU (Instruction for use)

MASTELLI S.r.l. Società Benefit

Via Bussana Vecchia, 32
18038 Sanremo (IM) - Italy

T: +39 0184 5111

E: businessdevelopment@mastelli.it

mastelli.com