



Reviscon<sup>®</sup>  
Viscoelastic Sodium Hyaluronate for Intra-Articular Injections

*Motion is life*



# VSY Biotechnology

*We inspire!*

With **VSY Biotechnology**, you can rely on over 15 years of experience in science driven development, manufacturing, and marketing of innovative medical products. Our orthopedic portfolio covers a wide and unique range of biotechnologically produced intra-articular hyaluronic acid injection products for the treatment of osteoarthritis; all of them produced under the highest industry standards, certified across the globe and clinically proven to be safe, effective and well tolerated by patients around the globe!

## 10 years of Reviscon® - Motion is life!

Since the market launch of **Reviscon®** in 2015, we have continuously expanded our innovative orthopedic portfolio and set new standards in the treatment of osteoarthritis with our unique technology. Our research approach is focused exclusively on the well-being of the patient. VSY Biotechnology's osteoarthritis therapy with **Reviscon®** is nowadays used worldwide and helps patients around the globe to improve their quality of life by reducing pain and improving overall mobility.



## The Reviscon® promise - Focus on the patient!

Our continuous investment in research and development of disruptive therapies for the treatment of musculoskeletal diseases reflects VSY Biotechnology's approach of using meticulous scientific precision to tackle the spread of one of the most challenging health problems of our time - osteoarthritis of the joints!

A clinically proven, symptom-oriented therapy is intra-articular injection with our hyaluronic acid preparation **Reviscon®**.

This treatment method has been an integral part of global physician's every day's clinical practice for many years, with a clear focus on the patient.

**Reviscon® - clinically proven, effective, safe, and well tolerated by patients around the globe!**

A team of experts is at your disposal for further information.

Please contact us at [orthopedics@vsybiotechnology.com](mailto:orthopedics@vsybiotechnology.com) or visit our website [www.reviscon.net](http://www.reviscon.net)

**Your VSY Biotechnology Orthopedics Team**

# OA therapy options with Reviscon®

An intra-articular injection therapy with the viscoelastic sodium hyaluronates **Reviscon®** is beneficial for patients:

1

suffering from joint pain due to osteoarthritis of the synovial joints (Kellgren – Lawrence Grade II-III).

2

who underwent arthroscopic knee surgery and joint lavage<sup>[3]</sup>.

3

with an active lifestyle, active and leisure athletes with first signs of movement limitations and joint pain.



4

who are seeking a clinically effective alternative to anti-inflammatory drugs and NSAID's.

5

who suffer from osteoarthritic conditions due to obesity.

6

who have shown to be allergic against biological impurities, animal proteins and/or preservative agents.

# Reviscon® features & benefits

*For a pain-free life in motion!*



## Highly purified NaHa solution

**Reviscon® 1.0%** (20 mg), **Reviscon® Plus 1.6%** (32 mg) and **Reviscon® Mono 2.0%** (48 mg) are highly purified, non-pyrogenic, non-immunogenic, linear sodium hyaluronate (NaHa) solutions for intra-articular injections into the synovial joints that are meticulously crafted for precision and purity, catering to individuals seeking a targeted and refined approach to joint health. **Reviscon® IA-HA** products are biotechnologically manufactured (microbiological fermentation) under international GMP standards according to ISO 13485 standards and do not contain any preservatives or ingredients from biological sources.



## Mimicking healthy human synovial fluid properties

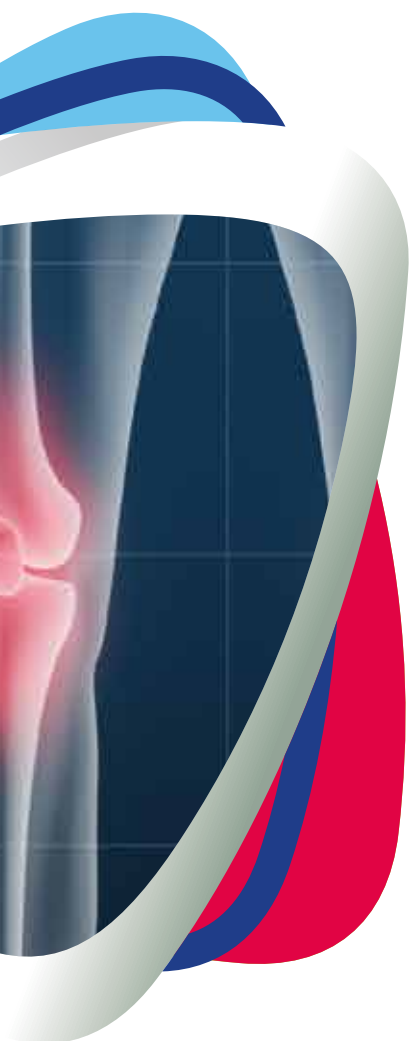
**Reviscon® 1.0%** (20 mg), **Reviscon® Plus 1.6%** (32 mg) and **Reviscon® Mono 2.0%** (48 mg) are designed to imitate natural synovial fluid properties to the highest extent possible. The biological mimicry of **Reviscon® IA-HA** ensures optimal bioavailability and integration into the joint environment, with minimal degradation, aligning closely with the natural properties of human synovial fluid.



## Patient centric administration protocols

The administration protocols of 3 - 5 syringes (**Reviscon® 1.0%**), 1 – 3 syringes (**Reviscon® Plus 1.6%**), one week apart from each other, and a recommended administration of one syringe every six months (**Reviscon® Mono 2.0%**), offers sustained and convenient therapy solutions for individuals seeking long-lasting joint support and underscores the product's efficacy in promoting joint health over an extended period. This approach reflects VSY Biotechnology's commitment to patient centric, well-structured, and effective treatment plans and optimizes the impact of IA-HA OA therapy, allowing for gradual and sustained improvement in joint health.





### Meticulous scientific precision



With a molecular weight of 3 MDa for the entire **Reviscon**<sup>®</sup> portfolio, coupled with meticulously designed elasticity and viscosity modes, tailored for rest and physical activity, **Reviscon**<sup>®</sup> IA-HA is a solution that aligns with the dynamic nature of joint movement. The high molecular weight in combination with an unparalleled rheological pattern and NaHa concentration ensures that each syringe delivers hyaluronic acid finely tuned to provide optimal viscoelastic supplementation to the synovial fluid, thereby offering unique cohesive energy characteristics for increased bioavailability, stability, pain relief and long-lasting efficiency.



### Lubricating- and shock absorbing properties

The structured pattern and linear molecule design of **Reviscon**<sup>®</sup> provides both, a high lubricating layer on the surrounding cartilage and tissue as well as an increased shock absorption effect, supporting the weight bearing capacities of the affected synovial joints.



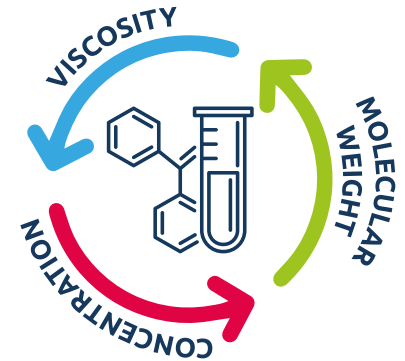
### Patient safety and therapy efficacy

Intra-articular viscosupplementation into the synovial joints with **Reviscon**<sup>®</sup> sodium hyaluronate is a safe and efficient procedure for patients suffering from OA and who have not responded sufficiently to previous pharmacologic treatments. To date, zero product related side-effects have been reported<sup>[2]</sup>.

# The Reviscon® formula

*Sophisticated product design resulting in therapeutic excellence!*

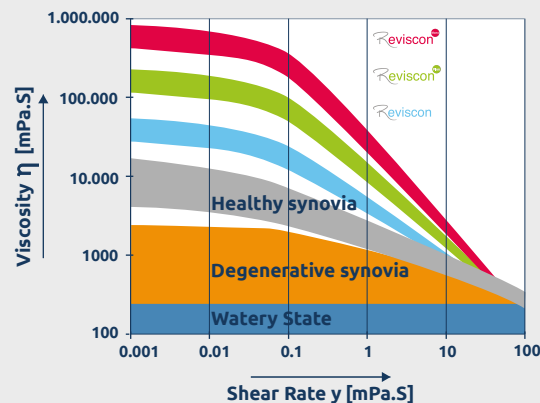
**Reviscon®** contains a structured, linear sodium hyaluronate (NaHa) pattern. This unique formulation and the scientifically designed, highly sophisticated interplay between **viscosity**, **molecular weight** and **hyaluronic acid concentration** complement each other in their mode of action and play a pivotal role in joint care solutions, providing patients with a potent and efficient remedy for joint-related concerns.



## VISCOSITY

### *Unparalleled rheological pattern*

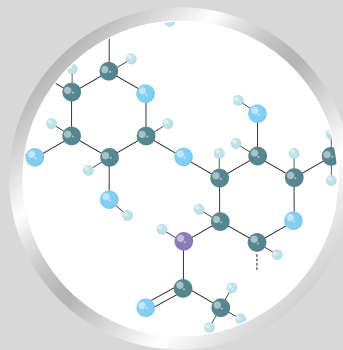
The unparalleled rheological profile of **Reviscon®** results in an efficient zero shear viscosity, thus simultaneously reducing pain and improving dynamic elasticity at higher shear rates for long-lasting patient mobility.



## MOLECULAR WEIGHT

### *High molecular weight of 3 Million Dalton*

**Reviscon®**, with 3 MDa, is a high molecular weight sodium hyaluronate with longer active ingredient chains providing unique cohesive energy characteristics, resulting in increased shock-absorption, high lubricating layer effects and long-lasting stability and efficiency for the patient.

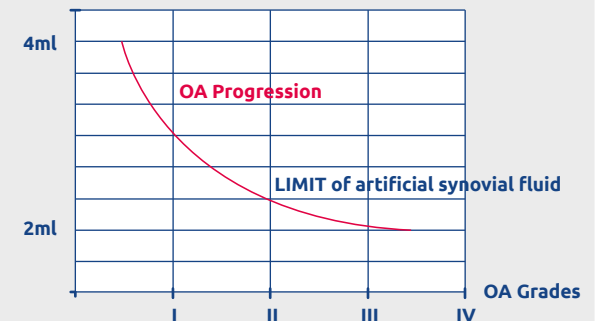


## HA CONCENTRATION

### *Different NaHa concentrations and dosage forms for individual therapeutic needs*

**Reviscon®** offers the most comprehensive and complete range of dosage forms and hyaluronic acid concentrations, adapted for different therapeutic needs in osteoarthritis treatment.

### Synovial Volume





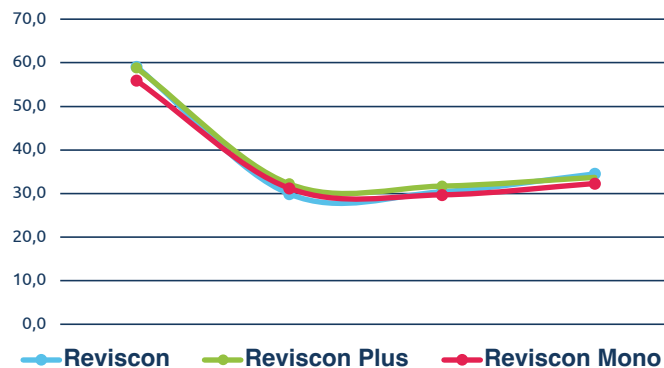
# Reviscon® clinical evidence

A recent study<sup>[1]</sup> carried out with **Reviscon®**, **Reviscon® Plus** and **Reviscon® Mono** proved that intra-articular injections for osteoarthritis with the **Reviscon®** sodium hyaluronate portfolio and different doses of linear high-molecular weight hyaluronic acid can improve pain, stiffness, function, and quality of life in patients suffering from OA over a six-month period.



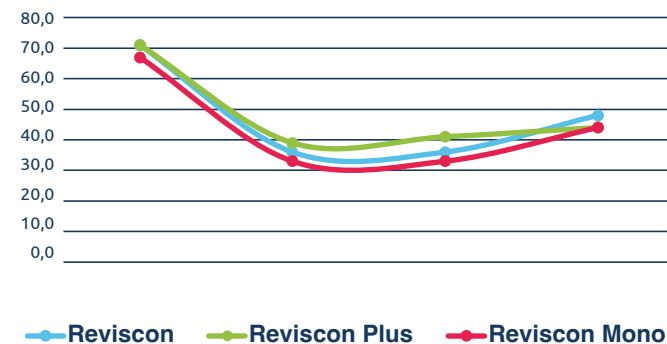
***Reviscon® - clinically proven and effective up to 6 months!***

**WOMAC - Total Index**






The overall **WOMAC** scores regarding pain, stiffness and physical function have decreased by an average of **42%** in all patient groups over a period of **6 months!**

**Patient Global VAS-Score**



The overall **VAS** scores regarding rest and movement pain, as well as quality-of-life have decreased by an average of **35%** in all patient groups over a period of **6 months!**

# Reviscon® at a glance!

|  | <br><b>Reviscon®</b> | <br><b>Reviscon® Plus</b> | <br><b>Reviscon® Mono</b> |
|--|--|---|---|
| <b>API</b><br>Active Pharmaceutical Ingredient | Linear Sodium Hyaluronate  | Linear Sodium Hyaluronate   | Linear Sodium Hyaluronate   |
| <b>Viscosity</b>                               | 35.000 MPa   | 250.000 MPa   | 900.000 MPa   |
| <b>Molecular weight</b>                        | 3 MDa  | 3 MDa   | 3 MDa   |
| <b>Concentration</b>                           | 20 mg / 1.0 %  | 32 mg / 1.6 %   | 48 mg / 2.0 %   |
| <b>PH value</b>                                | 6.8 – 7.6  | 6.8 – 7.6   | 6.8 – 7.6   |
| <b>Osmolality</b>                              | 300 to 350 mOsm/kg<br>(similar to the human body synovial fluid)                                     | 300 to 350 mOsm/kg<br>(similar to the human body synovial fluid)  | 300 to 350 mOsm/kg<br>(similar to the human body synovial fluid)  |
| <b>Volume</b>                                  | 2.0 ml   | 2.0 ml  | 2.4 ml  |
| <b>Origin</b>                                  | Biological Fermentation  | Biological Fermentation   | Biological Fermentation   |
| <b>Injection intervals</b>                     | 3 - 5 (weekly)   | 1 - 3 (weekly)  | Single Shot (every 6 months)  |
| <b>Shelf-life</b>                              | 3 years  | 3 years   | 3 years   |
| <b>Reference number</b>                        | 700 000 30   | 700 000 33  | 700 000 54  |

1.The effects of different doses of hyaluronic acid injections Diracoglu D<sup>1</sup>, Sezikli S<sup>1</sup>, Dernek B<sup>2</sup>, Yıldırım MA<sup>3</sup>, Sen EI<sup>1</sup>, Istanbul University Istanbul Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Istanbul, Turkey

2. Data on file (VSY Biotechnology GmbH, Leinfelden-Echterdingen, Germany)

3. Schneider S, Zahn T, Springorum HW, Schofer M. Influence of post-arthroscopic intra-articular administered hyaluronic acid on parameters of function and pain in the knee.OUP 2014; 7: 333–339 DOI 10.3238/oup.2014.0333–0339

## Disclaimer

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