

iD CLÍNICA™

PROFESSIONAL



iD CLÍNICA™ Bio-Spicule Therapy

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What is iD CLINICA™ Bio-Spicule Therapy?

iD CLINICA Bio-Spicules are composite structures with a chitinous core surrounded by a silica outer layer. The central scaffold is made of beta-chitin, providing a flexible and resilient base that supports the initial formation and growth of the spicule. The silica is deposited around this core in a highly organized manner, forming a rigid and durable shell. This siliceous outer layer gives the spicules their mechanical strength and protective function. The combination of a chitin core with a silica exterior allows the spicules to merge flexibility and strength, which is essential for maintaining the structural integrity of sponges in various aquatic environments.

What do iD CLINICA™ Bio-Spicules do to skin?

Spicules, similar to microneedling devices used in dermatology, create microchannels within the epidermis. These micro-injuries stimulate the skin's natural wound healing processes, particularly promoting collagen and elastin synthesis—key proteins for skin integrity and elasticity.

Mechanism of Micro-Injuries: Spicules or microneedles penetrate the epidermis, creating precise micro-channels with minimal damage. These micro-injuries trigger the body's tissue repair and regeneration response.

Cellular Response: Following micro-injury, various skin cells become activated. Fibroblasts, primarily in the dermis, respond to tissue disruption signals by migrating to the injury site.

Synthesis of Extracellular Matrix Proteins: Activated fibroblasts at the injury site increase the synthesis and secretion of extracellular matrix components, particularly collagen and elastin fibres.

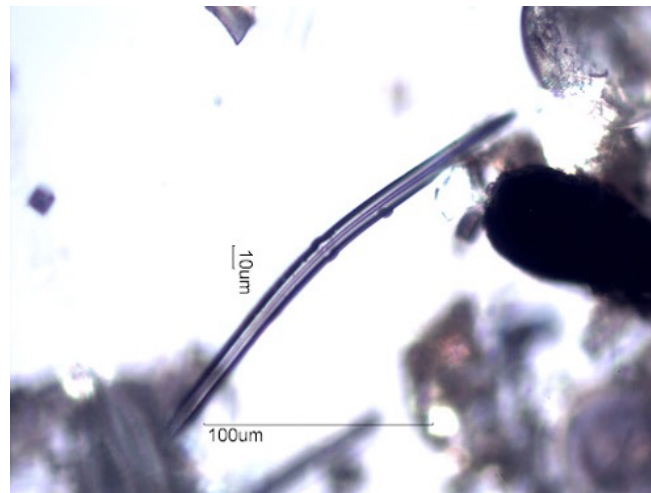
Collagen and Elastin Deposition: Newly synthesized collagen and elastin fibres accumulate within the dermal extracellular matrix, reinforcing its structural integrity and enhancing skin elasticity. This is crucial for restoring skin texture, firmness, and resilience.

Tissue Remodelling: Over time, the skin undergoes tissue remodelling. New collagen and elastin fibres replace damaged or aged tissue, resulting in visible improvements such as reduced wrinkles, scars, and overall enhanced skin quality.

Considerations: iD CLINICA™ Bio-Spicule Therapy should be used under sterile conditions by trained professionals to minimize infection risk and adverse reactions. Post-procedure skincare protocols are crucial for optimizing wound healing and maximizing the benefits of collagen and elastin induction.

What is a Bio-Spicule?

Spicules consist primarily of chitin and silica. Chitin and silica are considered safe components for skin treatment due to their biocompatibility and low allergenic potential. Chitin, a long-chain polysaccharide derived from the exoskeletons of crustaceans and insects, possesses excellent biodegradability and biocompatibility properties. It has been extensively studied for various medical and pharmaceutical applications, demonstrating minimal adverse reactions when applied to the skin. Chitin particles serve as gentle exfoliants, promoting skin cell turnover and enhancing smoothness. Its anti-inflammatory and antioxidant properties make it effective in soothing irritated skin and combating signs of aging. Spicules have the capability to penetrate and separate the epidermal layers, reaching deep into the papillary layer of the dermis. This penetration enhances collagenesis by stimulating fibroblasts, simulating the remodelling phase observed in wound healing, thereby contributing to the improvement of overall skin health.



Silica, an abundant mineral found in nature, is similarly well-tolerated by the skin. It is inert and non-toxic, making it suitable for a wide range of dermatological formulations. Moreover, silica particles are known for their ability to absorb excess oil and impurities from the skin surface, contributing to a clearer complexion. Silica has also shown it can facilitate the dislodgment of sebum plugs ensconced within pilosebaceous units. Its inherent mattifying attributes mitigate sebum secretion, preventing the propensity for plug formation. Furthermore, silica's gentle keratolytic properties foster desquamation of corneocytes, thereby mitigating pore obstruction. In summary, the safety profile of chitin and silica in skin treatments is supported by their natural origin and established track record of use in dermatology.

How many sessions?

We recommend a series of 3-4 sessions spaced 2 weeks apart for optimal and lasting results on the face. For other body areas, depending on individual conditions, a series of 6-8 sessions may be necessary. Maintenance sessions are advised every 6-12 months to sustain long-term benefits. It's also crucial to receive personalized guidance on home care for effective results.

Below is a list of research articles that focus on spicules and their primary use as an effective delivery system for topical solutions.

Udompataikul, M., Wongniraspai, M., Showpittapornchai, U. and Jariyapongsakul, A. (2012). The study on effects and safety of *Spongilla lacustris* in 3% hydrogen peroxide solution on rat skin. *Journal of the Medical Association of Thailand = Chotmaiher Thangphaet*, [online] 95 Suppl 12, pp.S15-20. Available at: <https://pubmed.ncbi.nlm.nih.gov/23513460/>.

<https://pubmed.ncbi.nlm.nih.gov/23513460/>

Kim, T.G., Lee, Y., Kim, M.S. and Lim, J. (2022). A novel dermal delivery system using natural spicules for cosmetics and therapeutics. *Journal of Cosmetic Dermatology*. doi:<https://doi.org/10.1111/jocd.14771>.

<https://onlinelibrary.wiley.com/doi/10.1111/jocd.14771>

Zhang, S., Ou, H., Liu, C., Zhang, Y., Mitragotri, S., Wang, D. and Chen, M. (2017). Skin Delivery of Hydrophilic Biomacromolecules Using Marine Sponge Spicules. *Molecular Pharmaceutics*, 14(9), pp.3188–3200. doi:<https://doi.org/10.1021/acs.molpharmaceut.7b00468>.

<https://pubmed.ncbi.nlm.nih.gov/28763230/>

Kritsanaporn Tansathien, Puvamin Suriyaaumporn, Ponwanit Charoenputtakhun, Tanasait Ngawhirunpat, Praneet Opanasopit and Worranan Rangsimawong (2019). Development of Sponge Microspicule Cream as a Transdermal Delivery System for Protein and Growth Factors from Deer Antler Velvet Extract. *Biological & Pharmaceutical Bulletin*, 42(7), pp.1207–1215. doi:<https://doi.org/10.1248/bpb.b19-00158>.

<https://pubmed.ncbi.nlm.nih.gov/31257296/>

Liang, X., Zhang, J., Ou, H., Chen, J., Samir Mitragotri and Chen, M. (2020). Skin Delivery of siRNA Using Sponge Spicules in Combination with Cationic Flexible Liposomes. 20, pp.639–648. doi:<https://doi.org/10.1016/j.omtn.2020.04.003>.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7210381/>

Zhang, C., Zhang, K., Zhang, J., Ou, H., Duan, J., Zhang, S., Wang, D., Samir Mitragotri and Chen, M. (2019). Skin delivery of hyaluronic acid by the combined use of sponge spicules and flexible liposomes. *Biomaterials Science*, 7(4), pp.1299–1310. doi:<https://doi.org/10.1039/c8bm01555d>.

<https://pubmed.ncbi.nlm.nih.gov/30821312/>

Zhang, C., Duan, J., Huang, Y. and Chen, M. (2021). Enhanced Skin Delivery of Therapeutic Peptides Using Spicule-Based Topical Delivery Systems. *Pharmaceutics*, 13(12), p.2119. doi:<https://doi.org/10.3390/pharmaceutics13122119>.

<https://pubmed.ncbi.nlm.nih.gov/34959402/>

Before/After Images (PLEASE DO NOT SHARE!)



