OsteoBiol®
by Tecnoss

Gen-Os®

A DUAL-PHASE BIOMATERIAL

Collagenated heterologous cortico-cancellous bone mix

REGENERATION SCIENCE

INSPIRED BY NATURE

A unique biotechnology

TECNOSS®: A UNIQUE PROCESS THAT ACCELERATES AND GUIDES NATURAL BONE REGENERATION

Tecnoss® developed and patented a unique biotechnology that prevents the ceramization phase of natural bone and preserves the tissue collagen, allowing an osteoclastic-type remodelling of the biomaterial similar to physiological bone turnover and delivering a product endowed with characteristics very similar to human mineral bone[1].

The combination of these factors allows a consistent new bone formation and a close contact between neo-formed bone and biomaterial.

COLLAGEN: A KEY FACTOR FOR BONE REGENERATION

Collagen has a key role in bone regeneration process in that:

a) it acts as a valid substrate for platelet activation and aggregation
b) it serves to attract and differentiate the mesenchymal stem cells present in the bone marrow[2]
c) it increases the proliferation rate of the osteoblasts up to 2/3 times[3]
d) it stimulates the activation of the platelets, osteoblasts and osteoclasts in the tissue healing process

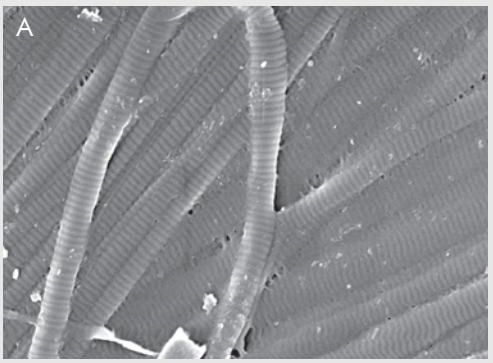
OSTEOBIOL®: UNIQUE COLLAGENATED BIOMATERIALS

Thanks to the innovative Tecnoss® technology, the OsteoBiol® line has the following important characteristics:

1) absence of a foreign body response[4]
2) gradual resorption over time[5,6]
3) stimulation/acceleration of physiological tissue healing process[2]
4) protection of the grafting site from infection (membranes)[7]
5) capability of carrying medication to the surgical site[8]

The Tecnoss® new generation of biomaterials, thanks to a revolutionary technology, goes beyond the simple role of aiding natural bone regrowth by stimulating and accelerating this vital physiological process.

OsteoBiol® by Tecnoss



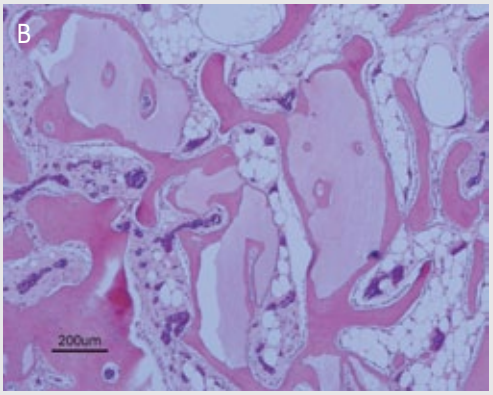


Fig. A | Collagenic structure of OsteoBiol® *Gen-Os*® Source: Courtesy of Prof Ulf Nannmark, University of Göteborg, Sweden

Fig. B | Histology of bone grafted with *Gen-Os*® Courtesy of Prof. Ulf Nannmark, University of Göteborg, Sweden

Fig. C | *Gen-Os*® vial

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A dual-phase biomaterial

CHARACTERISTICS

A natural replicate of autologous bone, *Gen-Os*® conserves the same intimate structures[1] (matrix and porous form) and presents highly osteoconductive properties[5]. It is biocompatible and bioavailable, as recognized by tests made according to the ISO 10993 method conducted at the Eurofins Biolab.

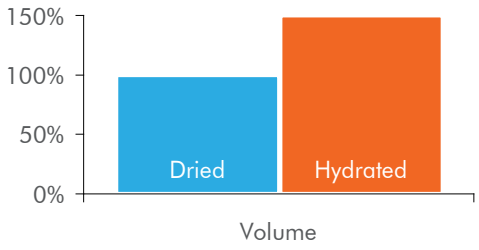
Gen-Os® is gradually resorbable and provides support in bone neoformation helping to preserve the original graft shape and volume (osteoconductive property)[4,9].

Moreover, thanks to its collagen content, the product facilitates blood clotting and the subsequent invasion of repairing and regenerative cells, favoring *restitutio ad integrum* of missing bone.

Because of its marked hydrophilia[10], it can function as a carrier for selected medication and drugs.

HANDLING

Gen-Os® must always be hydrated and thoroughly mixed with a few drops of sterile physiological solution to activate its collagen matrix and to enhance its adhesivity; it can also be mixed with patient's blood.



OsteoBiol® *Gen-Os*®
Source: Tecnoss s.r.l.

Gen-Os® expands up to 50% in volume after hydration with sterile saline: hydrated collagen contained in each granule also increases sensibily biomaterial adhesivity.

CLINICAL INDICATIONS OVERVIEW

Gen-Os® has been successfully used and documented for alveolar ridge preservation[11] in combination with *Evolution* membranes: the application of this biomaterial limits significantly the alveolar ridge width reduction that would naturally occur with spontaneous healing, preserving thus the alveolar ridge volume and allowing a correct second stage implant placement[12]. *Gen-Os*® is also indicated for lateral access maxillary sinus lift[9,13] and dehiscence regeneration[14], always in association with *Evolution* membranes.

Ongoing studies are also proving its effectiveness in periodontal regeneration of deep intrabony defects[15]. Due to its collagen content, once hydrated *Gen-Os*® becomes very sticky and hydrophylic[10]: it combines therefore extremely well with blood and is very stable once applied into the grafting site.

Its cortico-cancellous composition allows a progressive resorption of osteoclastic type, with in parallel a similar rate of new bone formation[5]: these unique properties allow a very good graft volume preservation, a healthy new bony tissue and ultimately, a successful implant rehabilitation.

(9) Cassetta M et al. Clin Oral Implants Res, 2015 oct;26(10):1180-4. Epub 2014 May 26
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Tissue of origin
Cortico-cancellous heterologous bone mix

Tissue collagen
Preserved

Physical form
Slightly radiopaque granules

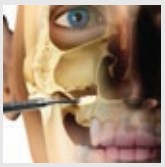
Composition
100% granulated mix

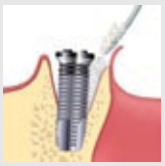
Granulometry
250-1000 μm

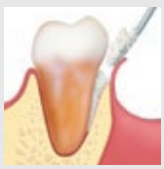
Re-entry time
4/5 months, depending on grafting site characteristics

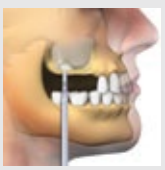
Packaging
Vial: 0.25 g, 0.5 g, 1.0 g, 2.0 g

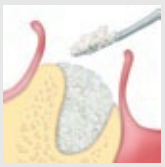
GMDN code
38746


LATERAL ACCESS SINUS LIFT


PERI-IMPLANT LESIONS

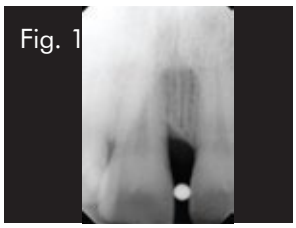

INTRABONY DEFECTS

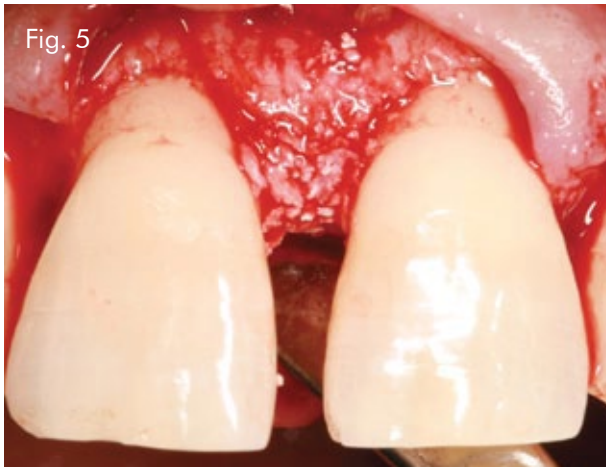

CRESTAL ACCESS SINUS LIFT OSTEOTOME TECHNIQUE

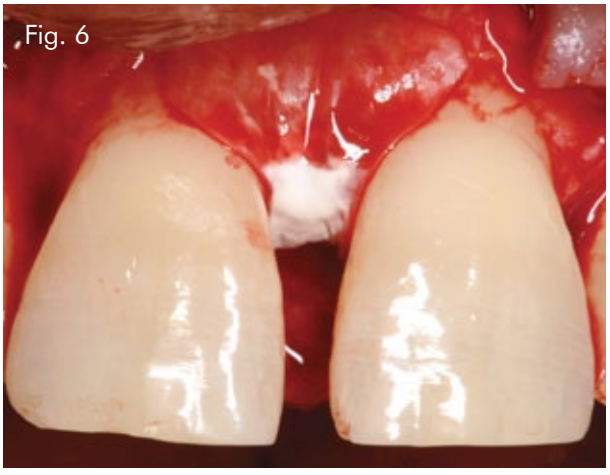

HORIZONTAL AUGMENTATION


ALVEOLAR REGENERATION

Excellent clinical performances







CASE REPORT

Periodontal regeneration

Sex: **male** | Age: **47**

Fig. 1 Pre-operative x-ray: 4-mm defect
Fig. 2 Pocket probing depth (PPD) 6 mm
Fig. 3 Flap elevation
Fig. 4 Intrabony defect
Fig. 5 Treatment with OsteoBiol® *Gen-Os®*
Fig. 6 Covering with OsteoBiol® *Evolution*
Fig. 7 Double sling suture
Fig. 8 Double sling suture - Occlusal view
Fig. 9 Healing after 1 week
Fig. 10 CAL gain of 3 mm after 9 months
Fig. 11 PPD 3 mm after 1 year
Fig. 12 X-ray after 1 year

Documentation provided by
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Bone substitute: **OsteoBiol® *Gen-Os®***
Membrane: **OsteoBiol® *Evolution***

Scientific publications

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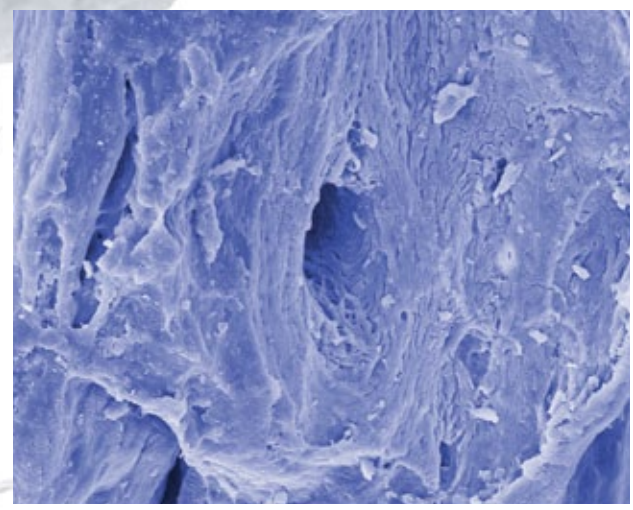
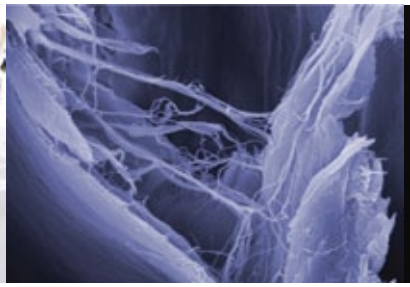
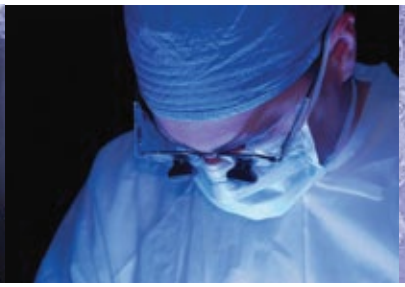
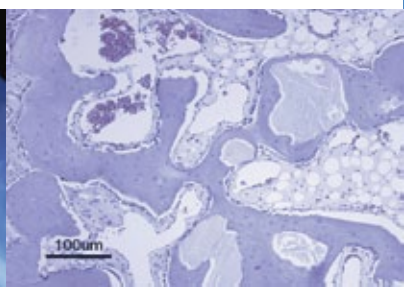


SEM image of a *Gen-Os*® granule
Courtesy of Prof. Ulf Nannmark, University of Göteborg

Gen-Os®

A DUAL-PHASE BIOMATERIAL

Collagenated heterologous cortico-cancellous bone mix

Tecnoss s.r.l. is an innovative, globally active company that develops, produces and documents premium-quality xenogenic biomaterials by the brands Tecnoss® and OsteoBiol®.

Its 20 years of research led to its patent-protected production process that ensures neutralization of antigenic components in order to achieve biocompatibility, while preserving the natural collagen matrix inside the biomaterial.

Tecnoss® products comply with highest quality standards such as ISO 10993, ISO 13485 (notified body Kiwa Cermet) and 93/42/EC (notified body CE 0373).

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