HYADENT BG & HYADENT

THE NATURAL PROMOTER OF REGENERATION

HYADENT BG, a highly concentrated and cross-linked hyaluronic acid gel, is designed specifically for the application in the dental field. Hyaluronic acid (HA), as one of the main components of the extracellular matrix is naturally present in the human body.1-3 Studies have shown that prolonged presence of HA during the healing process promotes healing by regeneration rather than reparation.4,5 Besides accelerating the healing of soft tissue and bone,6,7,8 the bacteriostatic properties of HA also protect the wound.9

HYADENT BG remains present throughout the various phases of the healing process due to its slow degradation pattern (several weeks).10 In addition, it aids the surgical periodontal treatment after application to the root surface and soft tissue. This leads to faster wound closure, substantial pocket reduction and enhanced attachment.11-13 When mixed with bone substitute material of any origin HYADENT BG forms an easily manageable putty, which may in addition lead to accelerated bone formation.14,15

HYALURONIC ACID-EFFECTS

HYADENT BG is a hyaluronic acid-based treatment solution of non-animal origin optimized for regenerative dental and periodontal applications.

• ACCELERATED TISSUE HEALING
  COORDINATES THE POST-OPERATIVE INFLAMMATION PROCESS AND ACCELERATES NEOANGIOGENESIS11,16

• IMPROVED OUTCOME
  STABILIZES COAGULUM AND SUPPORTS TISSUE REGENERATION11-13,16

• IMPROVED PREDICTABILITY
  BACTERIOSTATIC ACTION AND REDUCED PATHOGEN PENETRATION9

HYALURONIC ACID-MODE OF ACTION

1. ATTRACTS BLOOD
2. STABILIZES COAGULUM AND SUPPORTS TISSUE REGENERATION
3. BACTERIOSTATIC EFFECT PROVIDES PROTECTION
4. GROWTH FACTORS ATTRACTED BY HYALURONIC ACID
5. COORDINATES INFLAMMATION AND ACCELERATES NEO-ANGIOGENESIS

TREATMENT OPTIONS

NON-SURGICAL PROCEDURES:

Successive treatment after Scaling and Root Planing (SRP)

SURGICAL PROCEDURES:

Recession coverage with the Coronally Advanced Flap (CAF) technique11,12
Recession coverage with Connective Tissue Graft (CTG) or Free Gingival Graft (FGG)11-12
Infrabony defects6-8
Bone grafting (mixing with bone graft material)14,15
Oral wound healing9

Bone graft material granules mixed with HYADENT BG provides exceptional handling characteristics.
ACCELERATED BONE FORMATION
OPENING THE DOOR TO NOVEL THERAPEUTIC ALTERNATIVES

Hyaluronic acid (HA) is an attractive material to be combined with resorbable bone graft materials such as β-tricalcium phosphate (β-TCP). Six months after sinus floor augmentation procedures, the putty combining β-TCP granules and HA (β-TCP + HA) led to a significantly higher amount of bone and smaller marrow space compared to β-TCP granules alone. In addition, when used in combination with ultrasonic scaling and root planing (SRP) HA has a beneficial effect on the outcome of non-surgical periodontal procedures.

IMPROVED PREDICTABILITY
BACTERIOSTATIC ACTION AND REDUCED PATHOGEN PENETRATION

The bacteriostatic properties of hyaluronic acid (HA) support tissue regeneration. The use of HA during surgical and non-surgical periodontal treatment may also improve periodontal parameters. It has been shown, that periodontal therapy supported by HA leads to an increased level of bone formation. In addition, when used in combination with ultrasonic scaling and root planing (SRP) HA has a beneficial effect on the outcome of non-surgical periodontal procedures.

REDUCTION OF BLEEDING ON PROBING (BOP)

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>45 d</th>
<th>90 d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrasonic + HA</td>
<td>80%</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>Ultrasonic</td>
<td>20%</td>
<td>40%</td>
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The application of hyaluronic acid after ultrasonic treatment significantly reduced BOP from 72.7% to 4.5% at 90 days after treatment.

REDUCTION OF PROBING POCKET DEPTH (PPD)

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<th>45 d</th>
<th>90 d</th>
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<tbody>
<tr>
<td>Ultrasonic + HA</td>
<td>2.0 mm</td>
<td>1.5 mm</td>
<td>1.0 mm</td>
</tr>
<tr>
<td>Ultrasonic</td>
<td>0 mm</td>
<td>0.5 mm</td>
<td>1.0 mm</td>
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A significant reduction of the probing pocket depth was observed with a mean PPD reduction of 1.5 mm after 90 days.

DEEP MILLER CLASS II RECESSION
CLINICAL CASE PROVIDED BY PROF ANTON SCULEAN, UNIVERSITY OF BERNE, SWITZERLAND

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ACCELERATED BONE FORMATION

Hyaluronic acid (HA) is an attractive material to be combined with resorbable bone graft materials such as β-tricalcium phosphate (β-TCP). Six months after sinus floor augmentation procedures, the putty combining β-TCP granules and HA (β-TCP + HA) led to a significantly higher amount of bone and smaller marrow space compared to β-TCP granules alone. The increased osteogenic potential observed with the β-TCP + HA was attributed to the physicochemical and biological properties of HA. In addition, the β-TCP + HA putty had better surgical handling properties and was easier to compact into the designated defect.

BONE QUALITY

<table>
<thead>
<tr>
<th></th>
<th>Bone</th>
<th>Residual material</th>
<th>Marrow space</th>
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<tbody>
<tr>
<td>β-TCP</td>
<td>100%</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>β-TCP + HA</td>
<td>80%</td>
<td>60%</td>
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Six months after sinus floor augmentation β-TCP + HA led to a significantly increased amount of bone and reduced marrow space compared to β-TCP granules alone.
TREATMENT OF A GINGIVAL RECESSION
CLINICAL CASE PROVIDED BY PROF. ANDREA PILLONI, ROME, ITALY

PRE-OPERATIVE
A recession defect of Miller Class II was observed in the lower right canine despite the patient’s good dental hygiene and regular dental treatment.

SURGERY
The recession was treated surgically. After flap preparation, the root surface was carefully cleaned.

HYADENT BG was applied on to the root surface and incision areas of the soft tissue to support periodontal regeneration and fast wound healing (large image). HYADENT BG mixes well with the blood, which is essential for the clinical efficacy of hyaluronic acid (small image).

The wound was closed with a Coronally Advanced Flap (CAF).

1 YEAR POST-OPERATIVE
The recession remains well covered with healthy soft tissue.

SURGICAL TREATMENT OF AN INFRABONY DEFECT
CLINICAL CASE PROVIDED BY PROF. ANDREA PILLONI, ROME, ITALY

PRE-OPERATIVE
A deep infrabony defect could be detected on the x-ray and by probing.

SURGERY
The defect site was opened and cleaned. HYADENT BG was applied directly on the root surface allowing the stabilization of the clot.

The defect was filled with bone graft material and covered with HYADENT BG.

72 HOURS POST-OPERATIVE
Thanks to the HYADENT BG application between graft material and covering soft tissue, wound healing was accelerated. The wound was closed at this early stage.

12 MONTHS POST-OPERATIVE
Radiographical analysis of the site 12 months after treatment shows solid bone structures and a closure of the infrabony defect.
AVAILABLE PRODUCTS

<table>
<thead>
<tr>
<th>ARTICLE NUMBER</th>
<th>SIZE</th>
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<tbody>
<tr>
<td>hyadentBG BS091</td>
<td>HA Gel composed of a mixture of cross-linked (1.6%) and natural (0.2%) Hyaluronic Acid</td>
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<tr>
<td>hyadent BS065</td>
<td>Natural Hyaluronic Acid Gel (1,4% HA)</td>
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REFERENCES


HYADENT BG is a registered brand and manufactured by BioScience GmbH, Walsmühler Str. 18, 19072 Dümmer, Germany