

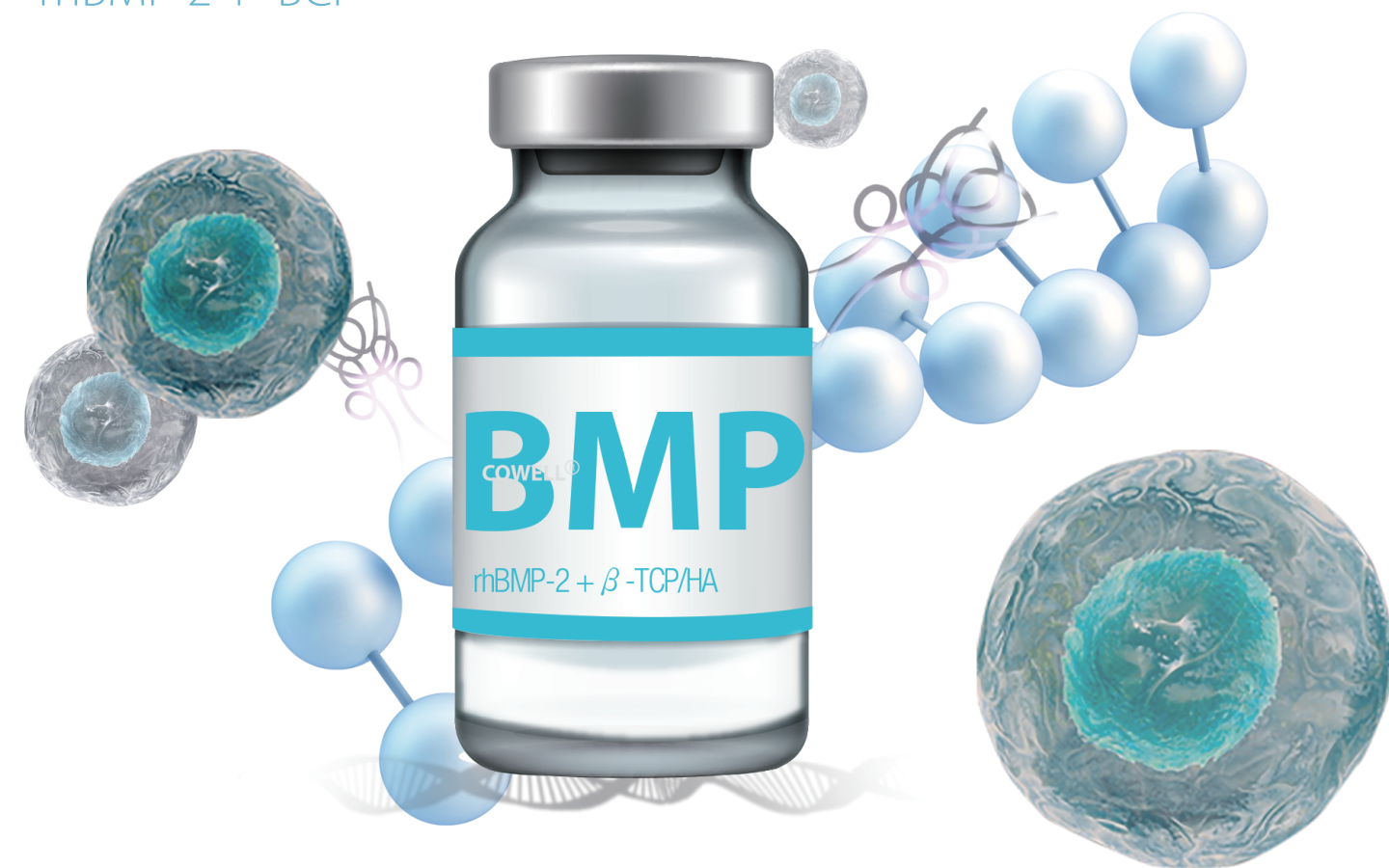
www.cowellmedi.com



COWELL® BMP

# COWELL® BMP

Osteoinductive Bone Graft  
rhBMP-2 + BCP



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Cowellmedi Co., Ltd.  
The pioneers in Dental Implant & E.rhBMP-2

# COWELL® BMP

Osteoinductive Bone Graft  
rhBMP-2 + BCP

## 1. Composition of COWELL® BMP

- COWELL® BMP is bone graft maertial based on the E.rhBMP-2 (E.Coli derived recombinant human bone morphogenetic protein type 2), developed for the first time in the world. COWELL®BMP is supported with 10 years of clinical data and over 40 studies.
- BCP as a carrier allows maintenance of space.

## 2. Features of COWELL® BMP

- Primary closure for soft tissue regeneration is not required.
- Regenerates adherent gingiva.
- Simplifies challenging bone grafting and soft tissue regeneration.
- Acts directly on stem cells.
- Induces bone regeneration without infection in extraction socket.
- Contains 1 mg of bone morphogenic protein per 1g of the particle.  
(1g of autologous bone contains 2ng of bone morphogenic protein)

## 3. Application

### A. Orthopedics

#### Bone grafts

- Fractures : Tibia, Radius, Ulna.
- Spine Fusion (Degenerative Disc Disease) :  
Interbody cage, Posteolateral.

#### Injection Device

- Lengthening : Distraction Osteogenesis.
- Osteoporosis : Hip joint fracture.
- Bone Defect : Bone cyst.
- Bone Fusion : Foot/shoulder revision.

### B. Dentistry

#### Bone grafts

- Severely resorbed alveolar ridges.
- Tooth extraction socket.
- Alveolar bone loss.
- Maxillary sinus bone loss.
- Bone-inductive implant : Coted implant.
- Maxillofacial reconstruction.

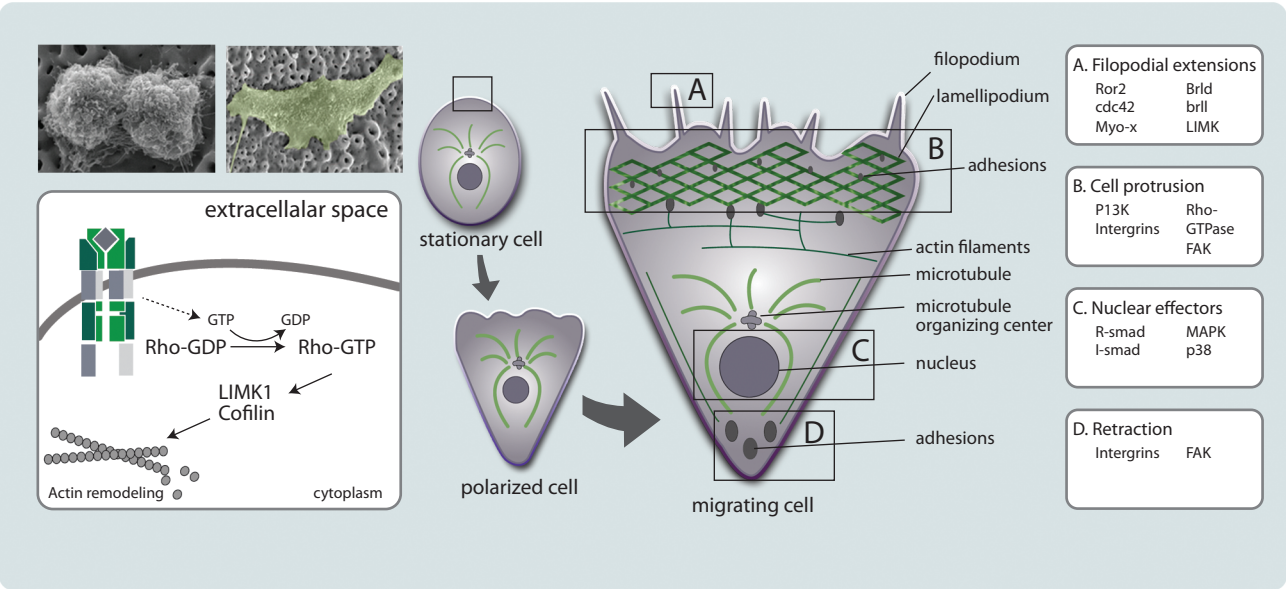
### C. Dermatology

#### Soft Tissue grafts

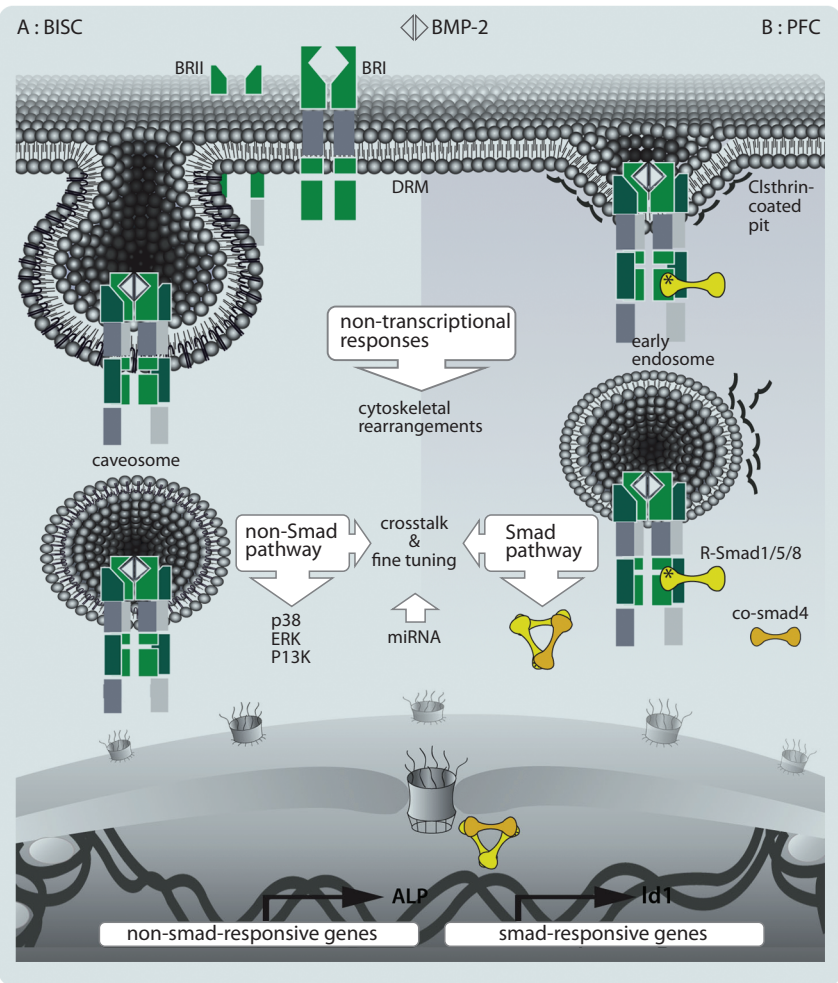
- Damaged skin regeneration.
- Diabetes ulcer.

## 4. Mechanism of Action of COWELL® BMP

### A. Migration of Cells with lamellipodia



### B. Cellular mechanisms

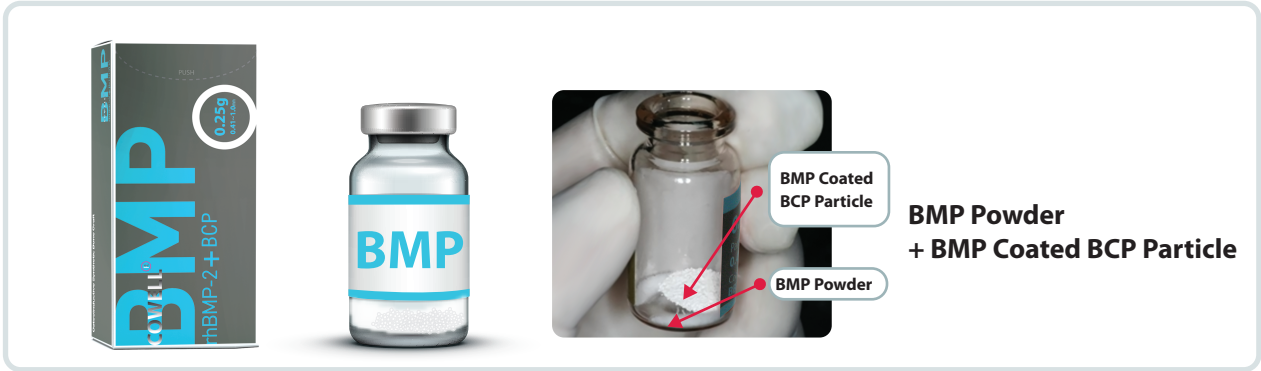


- BMP-2 adheres to the membrane of stem cell and induces expression of genes of nucleus. Then, BMP-2 migrates to recipient site.
- BMP-2 growth factor, Twist-2 transcriptional factor, and VEGF growth factor synthesize and secrete endogenous growth factor.
- Proliferation of osteoblast of osteocyte, and proliferation of fibroblast in dermis and keratinocyte of the skin.
- Twist-2 transcriptional factor induces tissue regeneration in osseous tissue and adherent gingival area.






5. Product Type

COWELL® BMP (One vial)



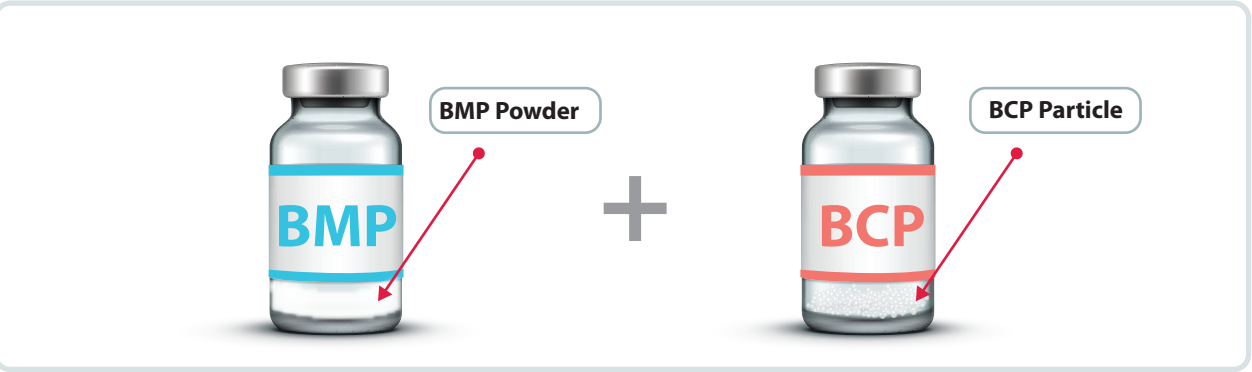
• Dose and particle size of the COWELL® BMP

														
<table><tr><th>Product Code</th><th>Particle Size</th></tr><tr><td>BB1010</td><td>0.41~1.0mm</td></tr></table>	Product Code	Particle Size	BB1010	0.41~1.0mm	<table><tr><th>Product Code</th><th>Particle Size</th></tr><tr><td>BB1025</td><td>0.41~1.0mm</td></tr></table>	Product Code	Particle Size	BB1025	0.41~1.0mm	<table><tr><th>Product Code</th><th>Particle Size</th></tr><tr><td>BB1050</td><td>0.41~1.0mm</td></tr></table>	Product Code	Particle Size	BB1050	0.41~1.0mm
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BB1050	0.41~1.0mm													

※ A vial of 0.1g can be used for less than one extraction socket, while 0.25g/0.5g can be used for maxillary sinus or for the wide bone defect area.



COWELL® BMP Plus (Two vials)



• Dose and particle size of the COWELL® BMP Plus.

BMP 0.1mg			
Product Code	BMP Dose	Particle Dose	Particle Size
EBB0125	0.1mg	0.25g	0.41~1.0mm
EBB0105	0.1mg	0.5g	0.41~1.0mm
EBB1110	0.1mg	1g	0.41~1.0mm
EBB1220	0.1mg	2g	0.41~1.0mm

BMP 0.25mg			
Product Code	BMP Dose	Particle Dose	Particle Size
EBB2525	0.25mg	0.25g	0.41~1.0mm
EBB2505	0.25mg	0.5g	0.41~1.0mm
EBB1125	0.25mg	1g	0.41~1.0mm
EBB1225	0.25mg	2g	0.41~1.0mm

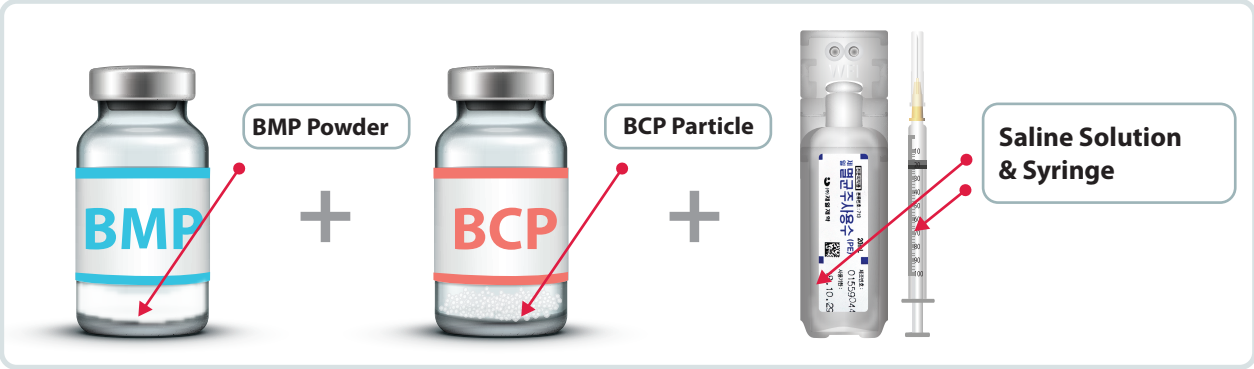
BMP 0.5mg			
Product Code	BMP Dose	Particle Dose	Particle Size
EBB0525	0.5mg	0.25g	0.41~1.0mm
EBB0505	0.5mg	0.5g	0.41~1.0mm
EBB1150	0.5mg	1g	0.41~1.0mm
EBB1250	0.5mg	2g	0.41~1.0mm

BMP 1mg			
Product Code	BMP Dose	Particle Dose	Particle Size
EBB1025	1mg	0.25g	0.41~1.0mm
EBB1050	1mg	0.5g	0.41~1.0mm
EBB1011	1mg	1g	0.41~1.0mm
EBB1012	1mg	2g	0.41~1.0mm

BMP 2mg			
Product Code	BMP Dose	Particle Dose	Particle Size
EBB2025	2mg	0.25g	0.41~1.0mm
EBB2050	2mg	0.5g	0.41~1.0mm
EBB2011	2mg	1g	0.41~1.0mm
EBB2012	2mg	2g	0.41~1.0mm



INNO GF Kit (Two vials + Saline Solution + Syringe)



• Dose and particle size of the INNO GF Kit.

BMP 0.1mg

Product Code	BMP Dose	Particle Dose	Particle Size
IBB0125	0.1mg	0.25g	0.41~1.0mm
IBB0105	0.1mg	0.5g	0.41~1.0mm
IBB1110	0.1mg	1g	0.41~1.0mm
IBB1220	0.1mg	2g	0.41~1.0mm

BMP 0.5mg

Product Code	BMP Dose	Particle Dose	Particle Size
IBB0525	0.5mg	0.25g	0.41~1.0mm
IBB0505	0.5mg	0.5g	0.41~1.0mm
IBB1150	0.5mg	1g	0.41~1.0mm
IBB1250	0.5mg	2g	0.41~1.0mm

BMP 2mg

Product Code	BMP Dose	Particle Dose	Particle Size
IBB2025	2mg	0.25g	0.41~1.0mm
IBB2050	2mg	0.5g	0.41~1.0mm
IBB2011	2mg	1g	0.41~1.0mm
IBB2012	2mg	2g	0.41~1.0mm

BMP 0.25mg

Product Code	BMP Dose	Particle Dose	Particle Size
IBB2525	0.25mg	0.25g	0.41~1.0mm
IBB2505	0.25mg	0.5g	0.41~1.0mm
IBB1125	0.25mg	1g	0.41~1.0mm
IBB1225	0.25mg	2g	0.41~1.0mm

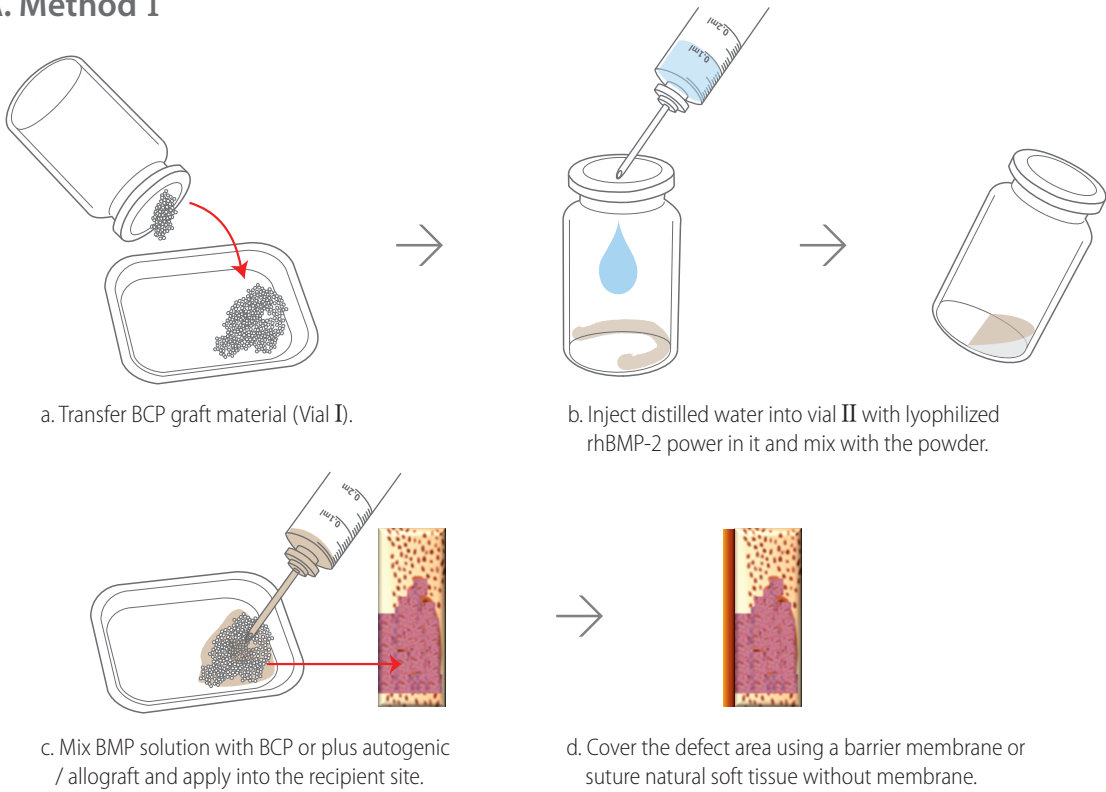
BMP 1mg

Product Code	BMP Dose	Particle Dose	Particle Size
IBB1025	1mg	0.25g	0.41~1.0mm
IBB1050	1mg	0.5g	0.41~1.0mm
IBB1011	1mg	1g	0.41~1.0mm
IBB1012	1mg	2g	0.41~1.0mm

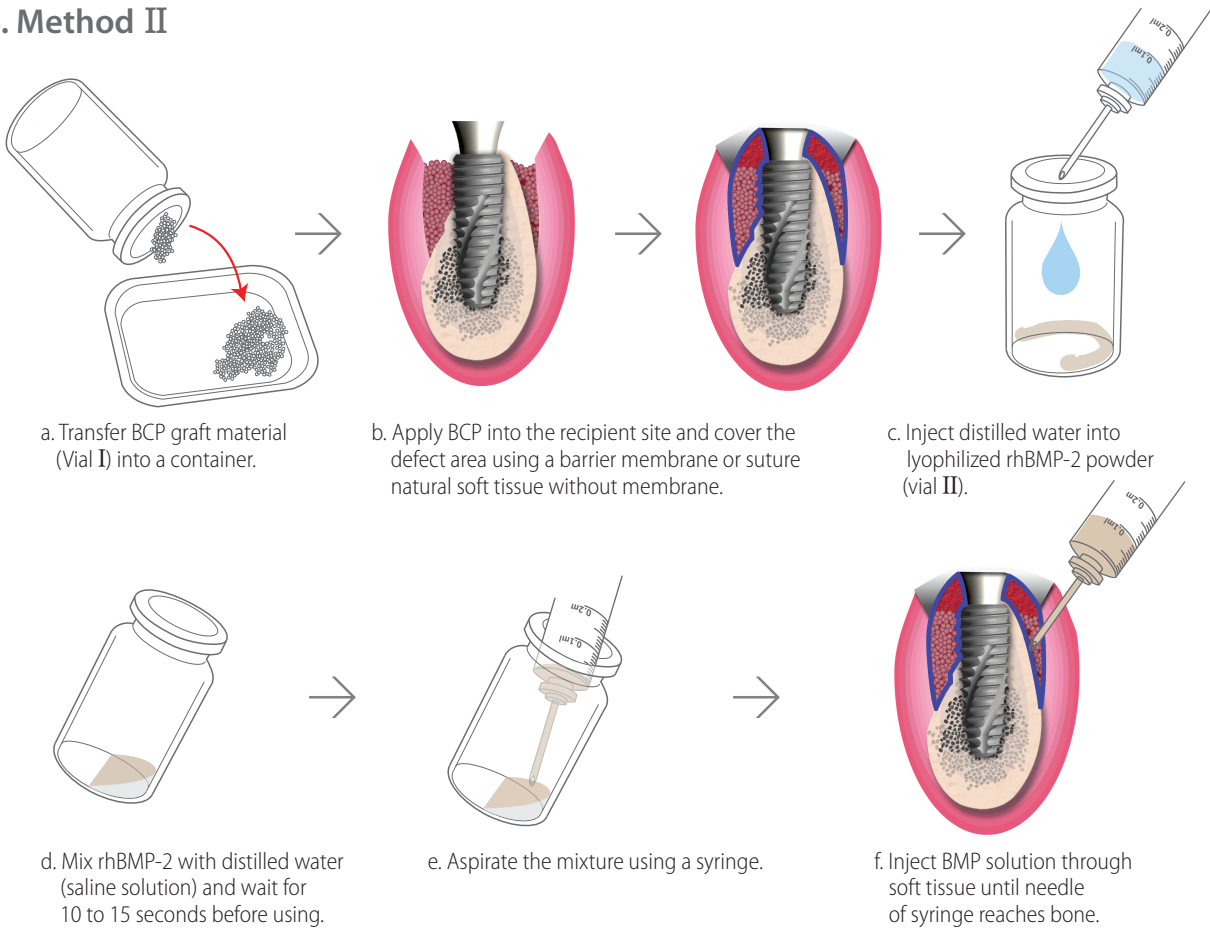


6. User Guide COWELL® BMP

A. Method I

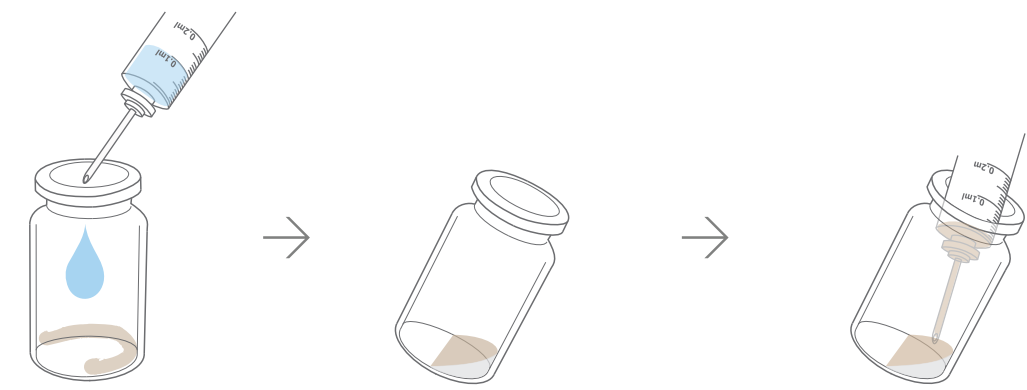


B. Method II





C. Method III



a. Inject distilled water into vial II with lyophilized rhBMP-2 power in it and mix with the powder.

b. Aspirate the mixture using a syringe.



c. Hydrate BMP-2 solution into membrane.

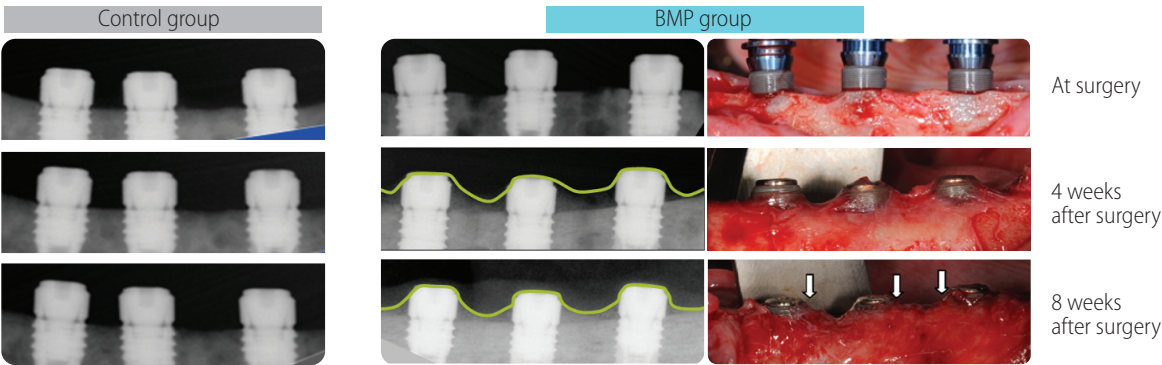
d. Apply BMP-2 solution soaked membrane to damaged site.

Dose of distilled water to make the mixture (BMP-2 Solution)

BMP Dose	Distilled Water Dose	BMP Dose	Distilled Water Dose
0.1mg	0.1ml	2mg	1.6ml
0.25mg	0.2ml	5mg	4ml
0.5mg	0.4ml	10mg	8ml
1mg	0.8ml	20mg	16ml

7. Study Result on COWELL® BMP

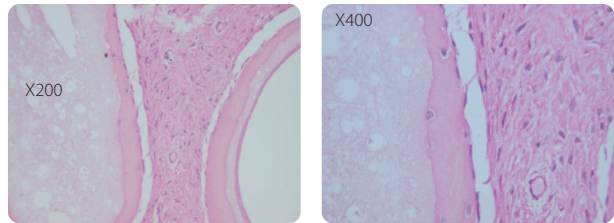
In Vivo Study



Jung-Bo Huh, et al., Alveolar ridge augmentation using anodized implants coated with Escherichia coli-derived recombinant human bone morphogenetic protein 2 (Beagle dog).

- Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2011.

Histologic Findings : Tissue specimen collected approximately four months after the maxillary sinus grafting (human)



- New bone was formed around the graft material.
- No inflammatory reaction was observed in connective tissue.
- Proliferation of collagen fiber was observed.
- Proliferation of fibrocyte was observed.
- Osteoblast was observed on the surface of newly formed bone.

8. Clinical Data of COWELL® BMP

- Vertical height of surrounding bone was compared three months after grafting in extraction socket.
- The study was conducted at Seoul National University Bundang Hospital, Yonsei University Dental Hospital, and Korea University Guro Hospital.

Group		Average	SD	95%CI	†P value
Height	Control	-1.087	1.413	(-1.565, -0.609)	0.0006**
	Experiment	-0.059	0.960	(-0.384, 0.266)	
Width at 75% ESL	Control	1.405	1.753	(0.812, 1.998)	0.346
	Experiment	1.863	2.310	(1.081, 2.644)	
Width at 50% ESL	Control	0.542	1.157	(0.15, 0.934)	0.016*
	Experiment	1.239	1.249	(0.816, 1.662)	
Width at 25% ESL	Control	0.006	1.149	(-0.383, 0.395)	<0.0001**
	Experiment	1.279	1.387	(0.81, 1.749)	

ESL : Extraction Socket Level      \*,P<.05, \*\*,P<.01, †: Student t-test

Jung-Bo Huh, et al., Multicenter, randomized clinical trial on the efficacy and safety of Escherichia-coli-derived rhBMP-2 with β-Tricalcium phosphate and hydroxyapatite in human extraction sockets.

- J Adv Prosthodont 2011;4 -134.