

Rabbit Tibia 12weeks Comparison Study between Ti oss(Chiyewon co.) and OCSB(Nibec co.)

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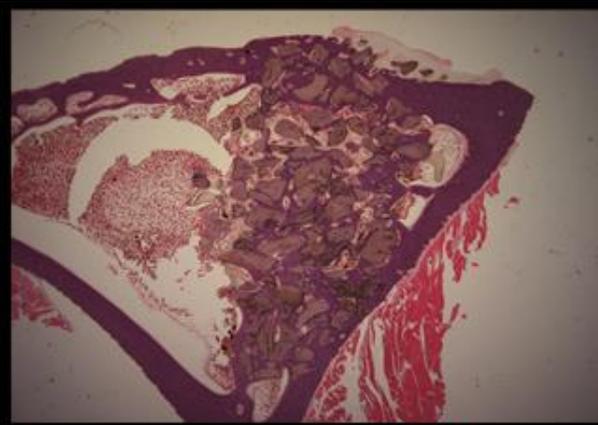
November 2011

For internal use

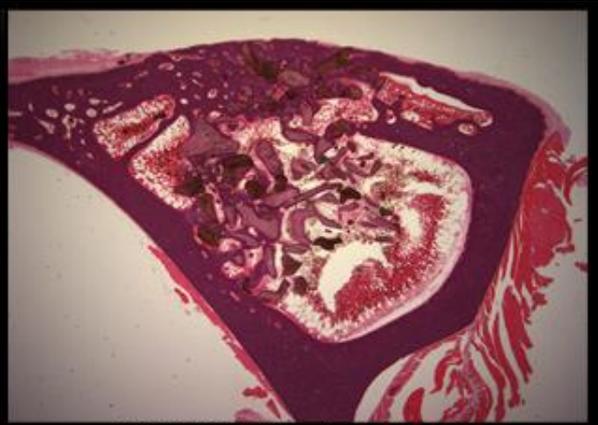
Purpose:

This rabbit study was executed at Yonsei Univ. in 2011 to compare the new bone formation ratio between two products; 1. Ti-Oss(Chiyewon co.) 2. OCSB(Nibec co.) which has been approved by FDA(Equimatrix, Osteohealth) and KFDA(OCSB, Nibec co.) to sell. The study design was to make same size of bone holes at each tibia and place the same volume of two graft materials into each hole. 12weeks after surgical placement, Biopsy were taken to examine the condition of bone formation.

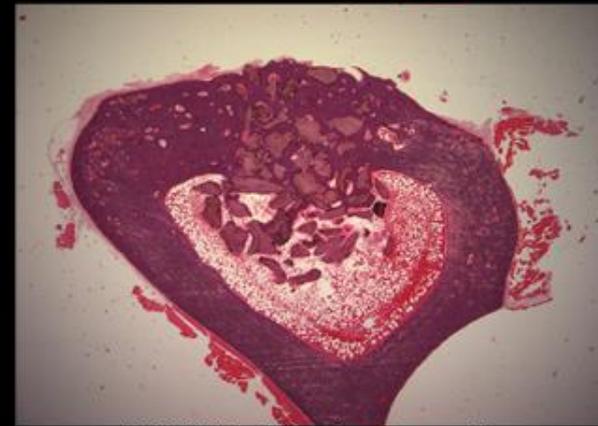
For Comparison purpose left-Ti Oss, right-OCSB. arranged.



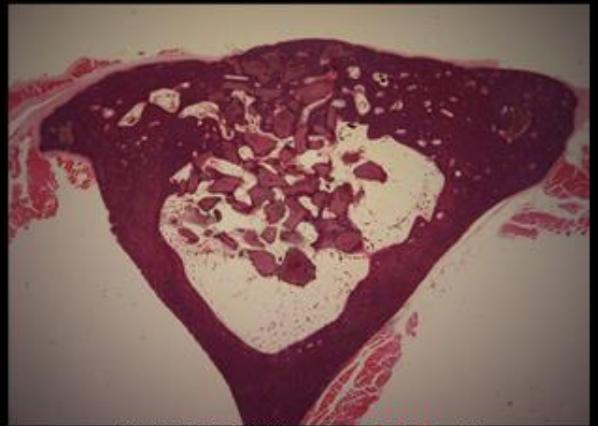
Rabbit Tibia 12weeks **Ti oss** 1



Rabbit Tibia 12weeks **OCSB** 1



Rabbit Tibia 12weeks **Ti oss** 2



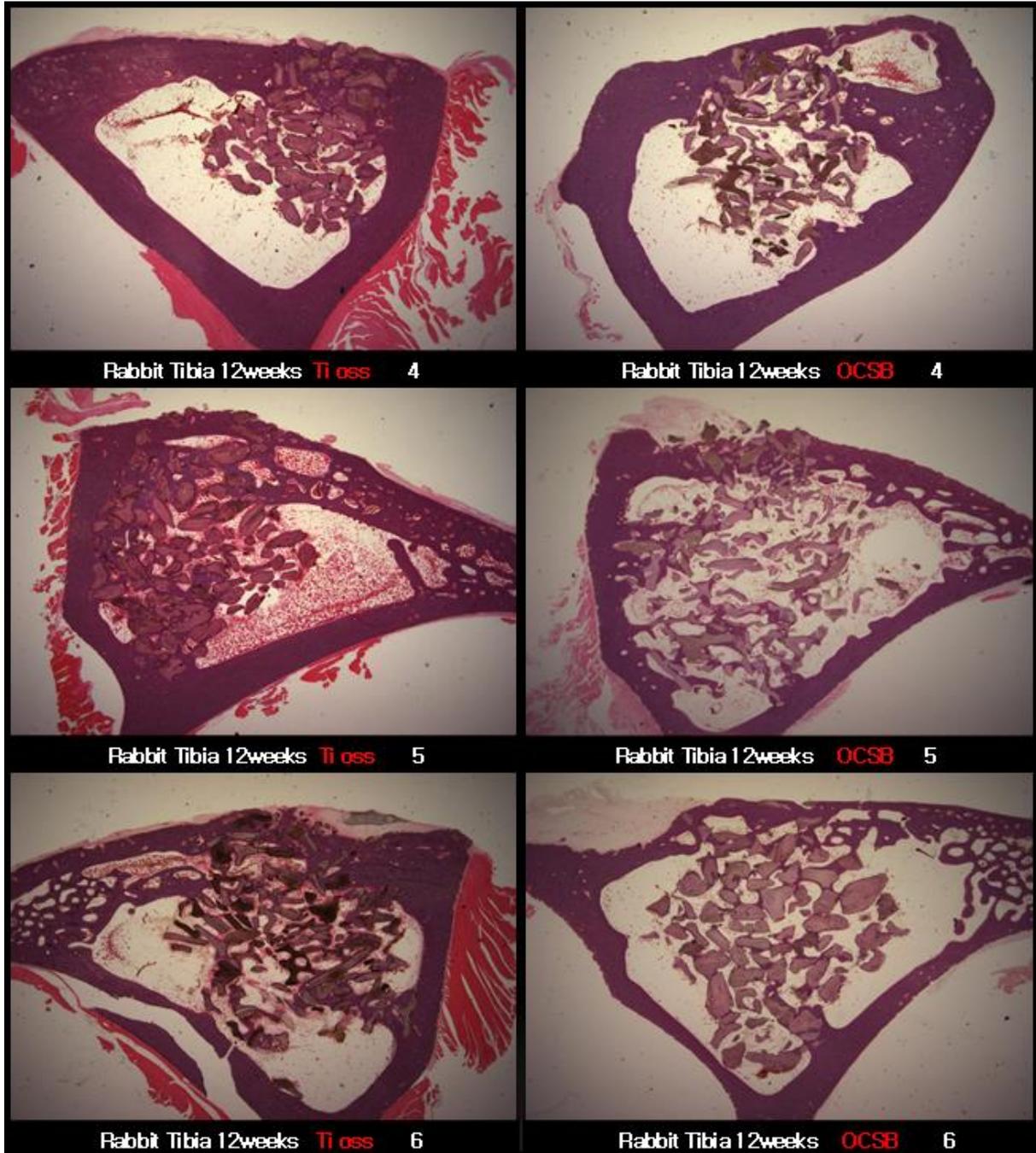
Rabbit Tibia 12weeks **OCSB** 2



Rabbit Tibia 12weeks **Ti oss** 3



Rabbit Tibia 12weeks **OCSB** 3



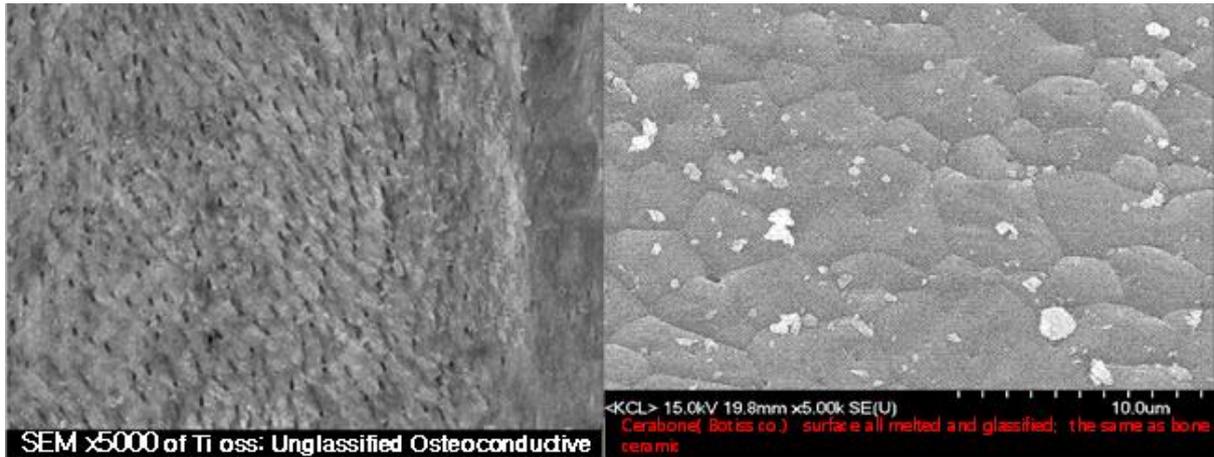
Results;

Ti-Oss(Chiyewon co.) showed highly superior new bone formation, compared to OCSB(Nibec co.).

Discussion;

This study proved safety and biocompatibility of Ti oss as bone substitute material. Significantly higher bone formation seems to be related with osteoconductive undamaged osteoblast preferred topograph of Ti-Oss, similar to human bone, due to low heat processing technique and PH control technique. High heat process technique(1,100-1,300’c, 2-3 hours) seriously alters the surface topograph, resulting in glassification. This simplifies the manufacturing difficulties, but collagen

network does not form well on glassified surface which is closely related to the bone formation ratio.



SEM x5000 of Ti oss: Unglassified Osteoconductive

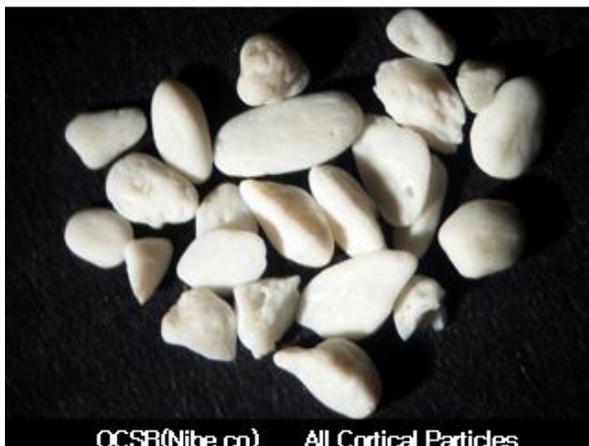
Ti oss(Chiyewon co.)

Cerabone(Botiss co.)

More importantly, cancellous multiporosity structure by refined vulverizing technique allows the blood vessel to grow inside the graft and osteoblast to follow after. On the other hand, small particles graft with no porosity or cortical particle prevents the blood vessel from moving inside the graft, resulting in poor bone formation or necrotic reaction.



Ti oss 1.2-1.7mm X 200- This is our Gold Standard. Angiogenic Structure

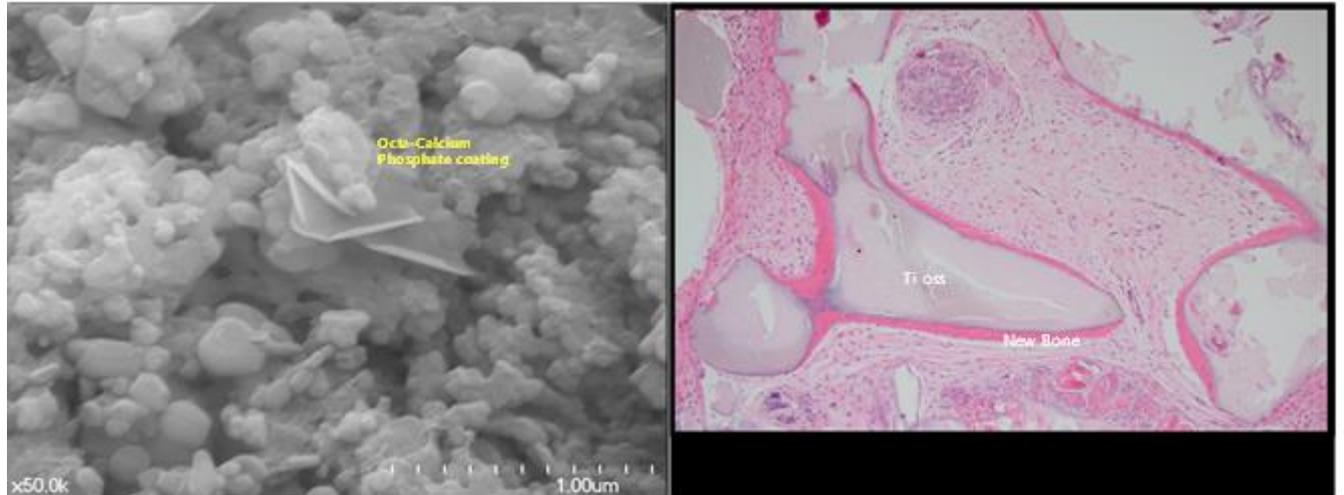


OCSB(Nibe co) All Cortical Particles



Endobone(3i) Porous Nature Damaged

Octacalcium phosphate is the very hot issue in bone biology as this may reduce the healing time in implantology by fast bone formation on this preHA crystal. SEM study revealed the existence of octacalcium phosphate crystal on Ti oss surface and this may explain excellent and very thin new bone formation all around on Ti oss biopsy samples in 4 months.



Detailed information available upon request to manager@ti-oss.com