TREATMENT OF FRACTURES IN OSTEOPOROTIC PATIENTS

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AIM BMP6 is a member of TGF-β superfamily with a high potential to induce new bone formation. Recently, we discovered that new carrier consisting of blood coagulum components can be used for the application of BMP6 which is further tested in our study. The carrier consists of modified self-derived blood coagulum for which BMP6 possesses high binding affinity.

METHODS In animal model of critical size defect of rabbit ulna we tested WBCD alone, commercial device containing 1g of bovine collagen and 3.5 mg of BMP7 (Osigraft), and WBCD containing 50 µg BMP6 *in vivo* for 8 weeks.

RESULTS We found that BMP6 was less sensitive to endogenous inhibitors and unlike BMP7, dissociated from the BMP antagonist noggin. We confirmed by dot blot analysis specific binding affinity of BMP6 to the components of blood coagulum. At 8 weeks following critical size ulna defect surgery WBCD containing BMP6 fully re-bridged the bone defect at a significantly accelerated rate than the commercial bone device. We explored the use of WBCD with low amounts of BMP6 and found that it was 2 orders of magnitude more potent than BMP7 used in current commercial devices. 50 µg BMP6 was more efficacious than 3.5 mg of BMP7 in *in vivo* rabbit ulna critical size defect.

CONCLUSION Recombinant human GMP produced BMP6 will be tested clinically in two indications for regeneration of the metaphyseal bone. The new device OSTEOGROW will be cost-effective, safer and therapeutically superior to existing commercial devices. Investigation and development of device are supported by a EC's seventh framework programme (FP7) **OSTEOGROW**.

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