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A novel injectable visco-analgesic (JTA-004®) with prolonged lubrication effects and anti-inflammatory properties for knee osteoarthritis

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Bone Therapeutics has developed an injectable visco-analgesic product (JTA-004®) intended to restore the natural composition of synovial fluid of osteoarthritic knees. The specific composition of JTA-004® is intended to reduce local inflammation and to prolong the lubrication effect. The anti-inflammatory properties of JTA-004® were assessed *in vitro* in an activated peripheral blood mononuclear cells model (PBMCs; from healthy donors) where activated PBMCs were contacted with JTA-004®, Ostenil® Plus (a reference visco-supplement) or positive controls (methotrexate and dexamethasone) for 3 days. In presence of JTA-004®, the proliferation of activated PBMCs was reduced by 52±2% compared to activate PBMCs alone. The positive control methotrexate decreased the proliferation of activated PBMCs by 73±8%. Moreover, JTA-004® reduced TNF-α secretion of activated PBMCs by 41±14% compared to activated PBMCs alone, whereas the positive control dexamethasone decreased its secretion by 54±6%. Ostenil® Plus did not impact activated PBMCs proliferation and TNF-α secretion. *In vivo*, the “lubrication” efficacy of JTA-004® and of Synvisc-One® (a reference visco-supplement) in a rat model of surgically induced knee OA (resection of the medial meniscus) was assessed by measuring the synovial fluid viscosity at different time points, up to 10 days after the intra-articular administration. At each time point, the synovial fluid viscosity of OA-knees treated with JTA-004® was higher than that of control knees. At ten days after injection, the synovial fluid viscosity of OA-knees treated with JTA-004® was still 67% higher than the viscosity of control knees while that of OA-knees treated with Synvisc-One® it was only 11% higher. Altogether, these *in vitro* and *in vivo* results demonstrated the superiority of JTA-004® compared to commercially available visco-supplements for OA treatment.

Biography

Julie Winand has completed her PhD at the Université Catholique de Louvain in 2013. Since 2014, she is Project Manager at Bone Therapeutics, a bone and joint regenerative company developing innovative products for the treatment of osteoarthritis (OA).

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