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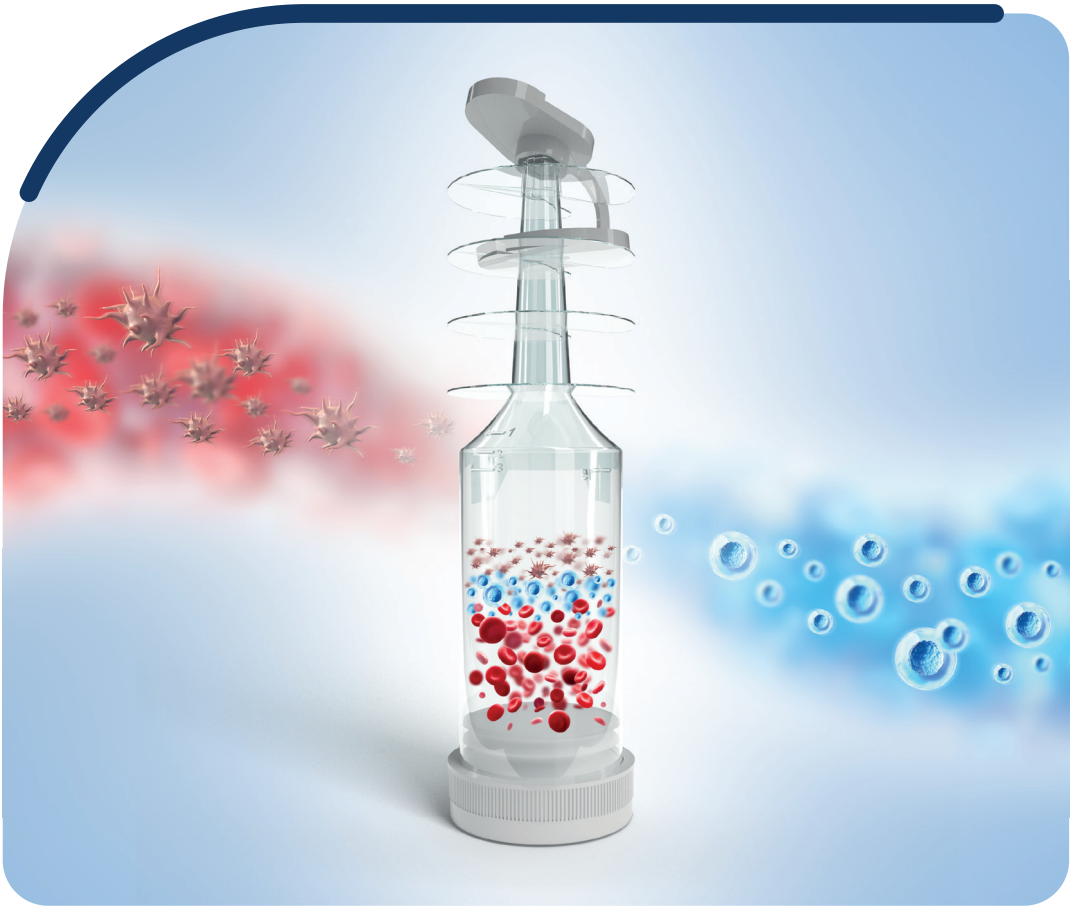
MEDICAL TECHNOLOGY

# Xerthra BMAC

## Efficient solution for bone marrow aspirate concentration



**Advanced medical devices**

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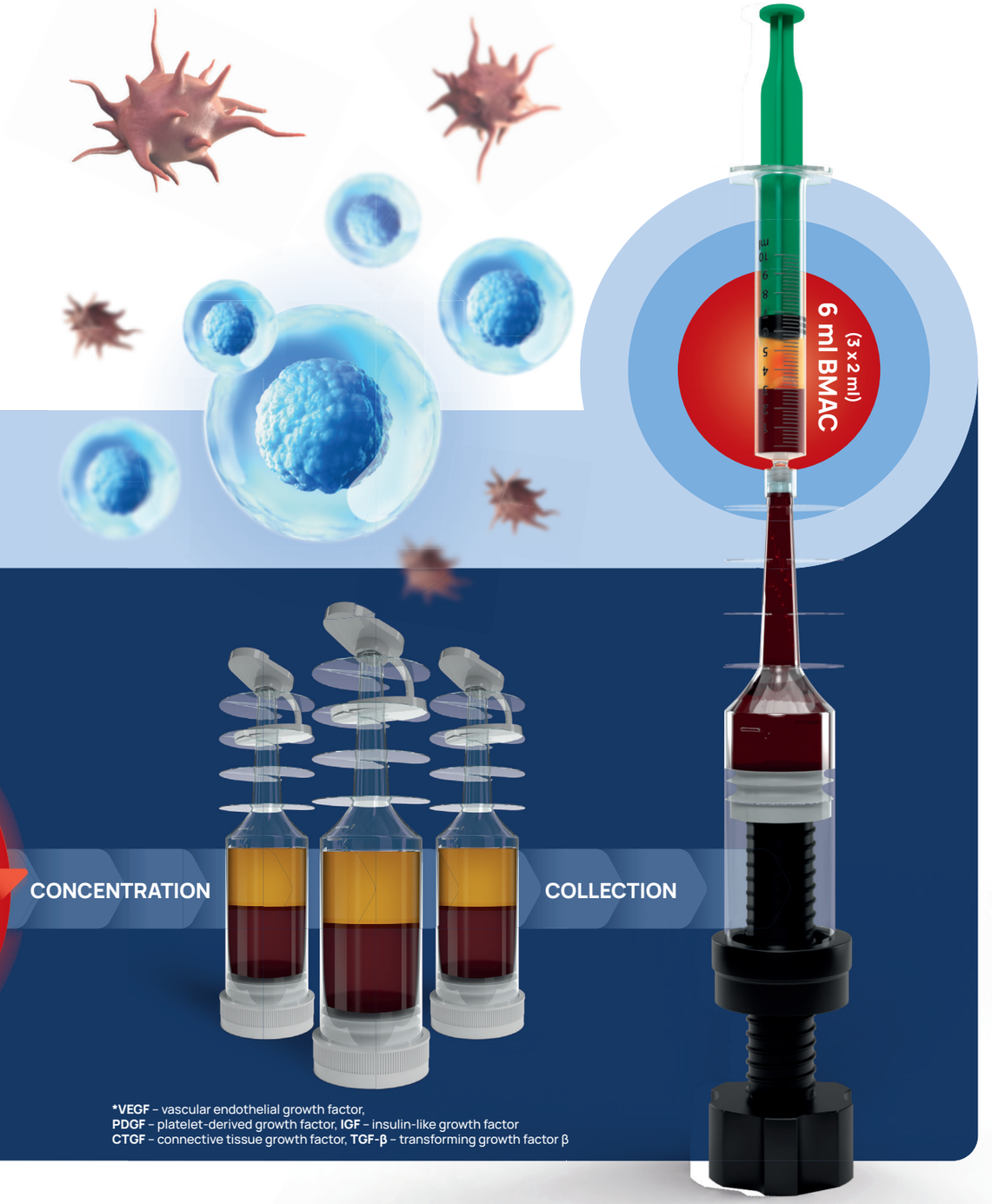
# Xerthra™ BMAC delivers product with higher concentration of mesenchymal stem cells and platelets, when compared to unprocessed bone marrow aspirate

**Concentration of bone marrow aspirate with Xerthra™ BMAC provides:**

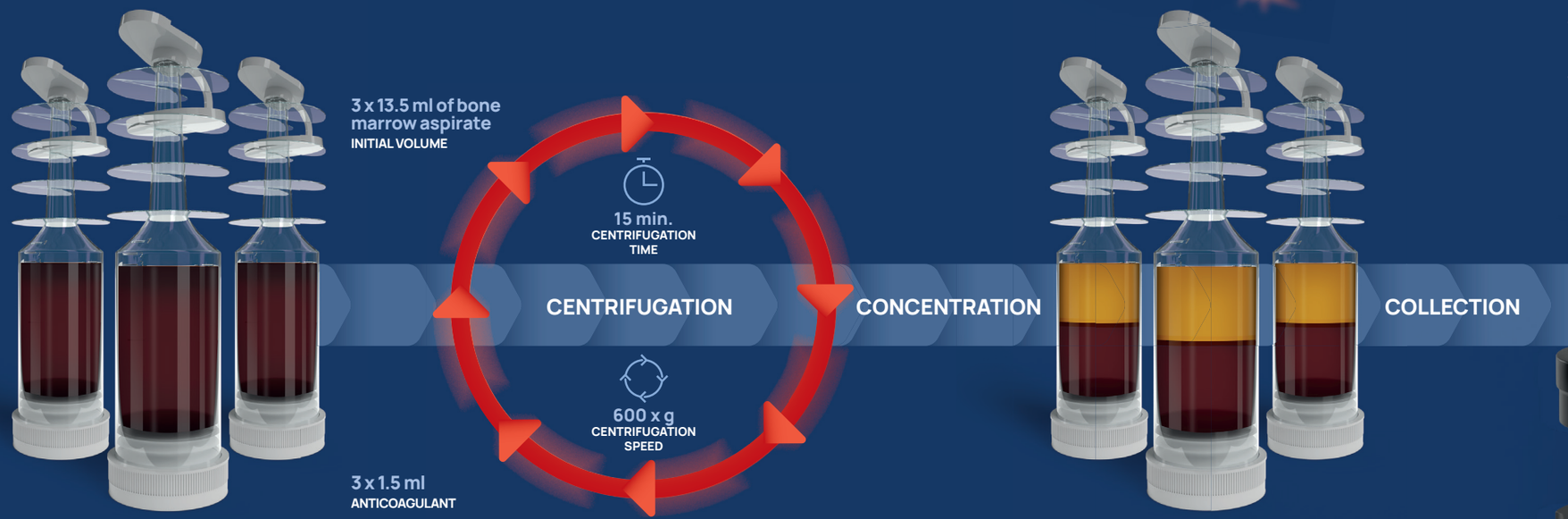
**5.3x** Mesenchymal stem cells

**3.8x** Platelets

together with increased concentration of growth factors, such as VEGF, PDGF, IGF* and without the occurrence of pro-inflammatory cytokines[11].



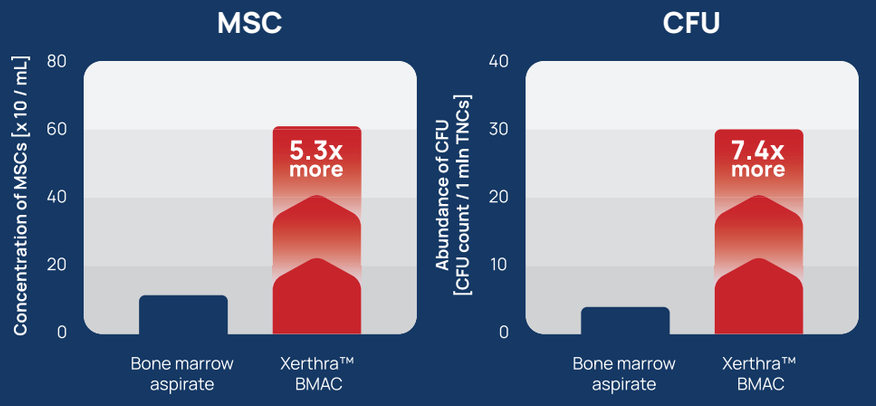

## Rapid and easy procedure to obtain BMAC with Xerthra™




***VEGF** – vascular endothelial growth factor,
**PDGF** – platelet-derived growth factor, **IGF** – insulin-like growth factor
**CTGF** – connective tissue growth factor, **TGF-β** – transforming growth factor β

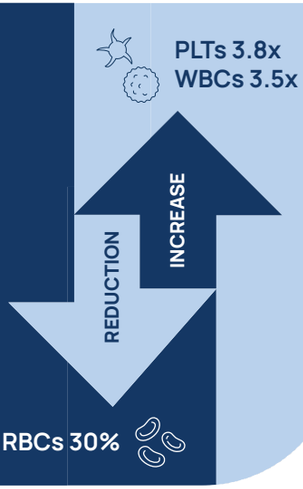
## Significantly higher content of MSCs and CFU due to concentration process provided by Xerthra™ BMAC

Xerthra™ BMAC concentration process allows to obtain 5.3x more mesenchymal stem cells (MSCs) and 7.4x more human bone marrow-derived colony forming units (CFU) in the final BMAC product, with simultaneous enhanced abundance of platelets and white blood cells.




## Xerthra™ BMAC provides a functional and safe autologous product

Xerthra™ BMAC allows to obtain product with increased abundance of platelets (PLTs) and white blood cells (WBCs) with simultaneous reduction of red blood cells (RBCs).




## Xerthra™ BMAC provides highly concentrated BMA, what ensures clinical efficiency of the treatment

Success of treatment with BMAC is strictly bounded with the amount of MSCs in the injectable product [12].

Use of BMAC with high concentration of stem cells and platelets guarantees a successful tissue regeneration [13].

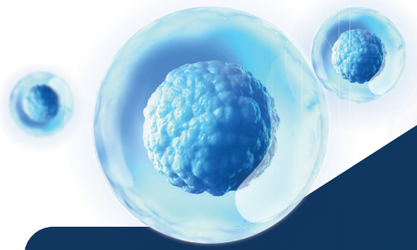
# Xerthra™ BMAC
## can be administered as:

1. Support of the knee meniscus regeneration.
2. Support of biologically based reconstruction of a cartilage.
3. Support treatment of bone marrow odema via subchondral administration.
4. Intra-articular injections, being a clinically reliable procedure in OA.

## Bone marrow as an efficient source of stem cells and platelets

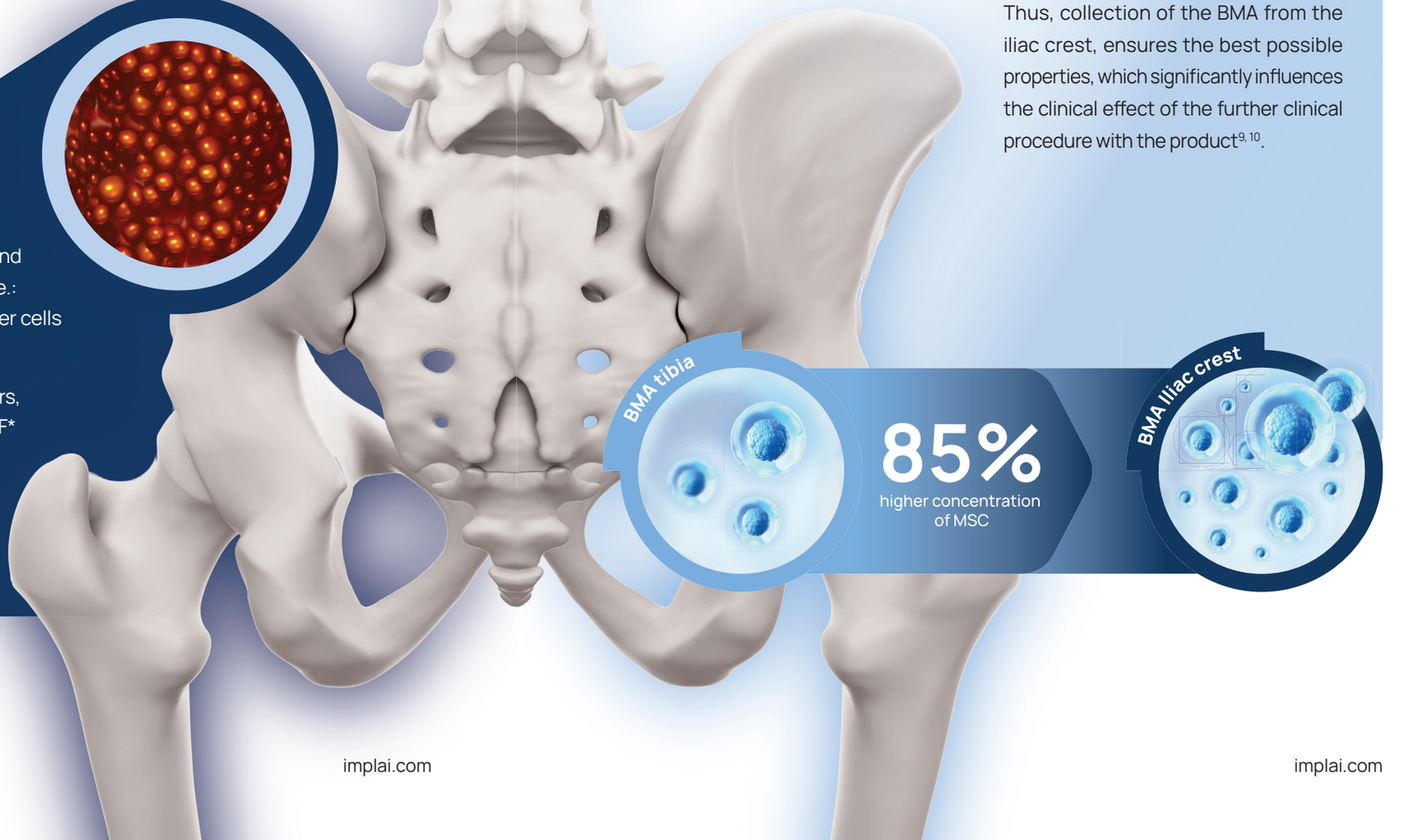
**Bone marrow** as the most significant source of stem cells and platelets has very high regenerative properties. Thus, bone marrow use is recommended in therapies that require substantially enhanced tissue reconstruction. Nevertheless, directly aspirated bone marrow (BMA-Bone Marrow Aspirate) contains insufficient abundance of stem cells and platelets to ensure relevant clinical effect. Hence, BMA requires additional concentration step in order to boost its regenerative potential[1,2,3].

# BMA contains



**Mesenchymal stem cells** (MSCs) that possess strong self-renewal and differentiation potential towards, i.e.: chondrocytes, osteocytes and other cells that build up joint tissues[4,5].

**Platelets** that release growth factors, e.g. TGF-β, PDGF, VEGF, CTGF and IGF* which have strong regenerative properties and support the differentiation, proliferation, migration and adhesion of stem cells to the injury site[6,7].






## Importance of bone marrow aspiration source

### Most relevant sites to obtain the bone marrow aspirate[8]:

- Iliac crest
- Proximal tibia
- Distal femur

BMA harvested from the iliac crest has a significantly higher content of mesenchymal stem cells, comparing to aspirate harvested from the tibia[9, 10]. Thus, collection of the BMA from the iliac crest, ensures the best possible properties, which significantly influences the clinical effect of the further clinical procedure with the product[9, 10].

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