

BIOTECH QUALITY, TECHNOLOGY AND MEDICAL REVOLUTION

PROTSMART™

First-class concentrator of proteins
and platelets

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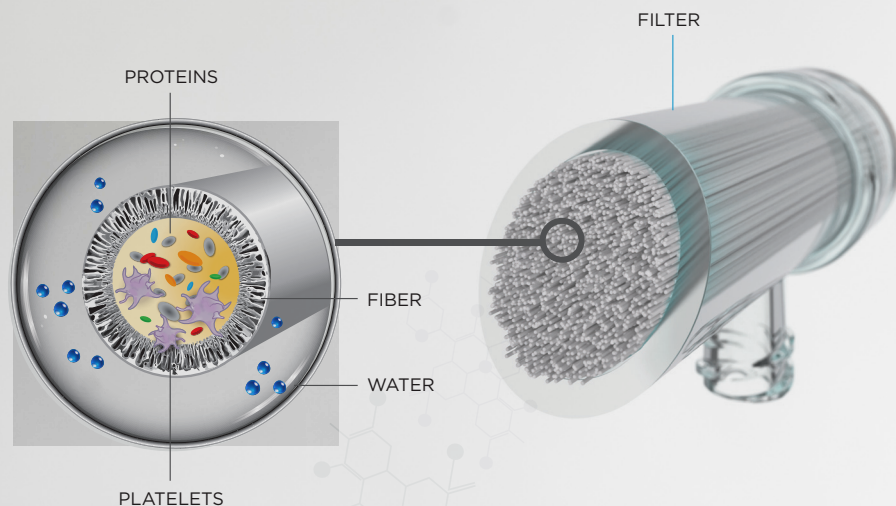
Mabelmed Swiss SA
Via Mesolcina 2
6500 Bellinzona
CH | Switzerland

T +41 91 835 40 91
F +41 91 220 01 06
www.mabelmed.swiss
info@mabelmed.swiss

Medica S.p.A.
Via Degli Artigiani, 7
41036 Medolla (MO)
Italy

T +39 0535 51159
F +39 0535 52605
www.medica.it
info@medica.it

MEDICA
BIOTECH DIVISION



PROTSMART™

ProtSmart™ was born from the combination of capillary membrane filtration technology and the concentration of blood products. Thanks to a morphology of a properly developed capillary membrane with an average pore size of 15,000 Da, it is possible to eliminate the plasma water, therefore concentrating on the platelets and the growth factors of the plasma.

A fast, easy and optimized process that only needs one centrifugal phase aimed at the sedimentation of red blood cells, which are later eliminated. PRP and PPP can be concentrated by ProtSmart™ with a volume reduction of about 70%.

Most plasma proteins that have an important role in promoting regeneration are preserved and concentrated, thanks to the cut-off of capillary membranes.

GROWTH FACTORS

Regeneration is inside us

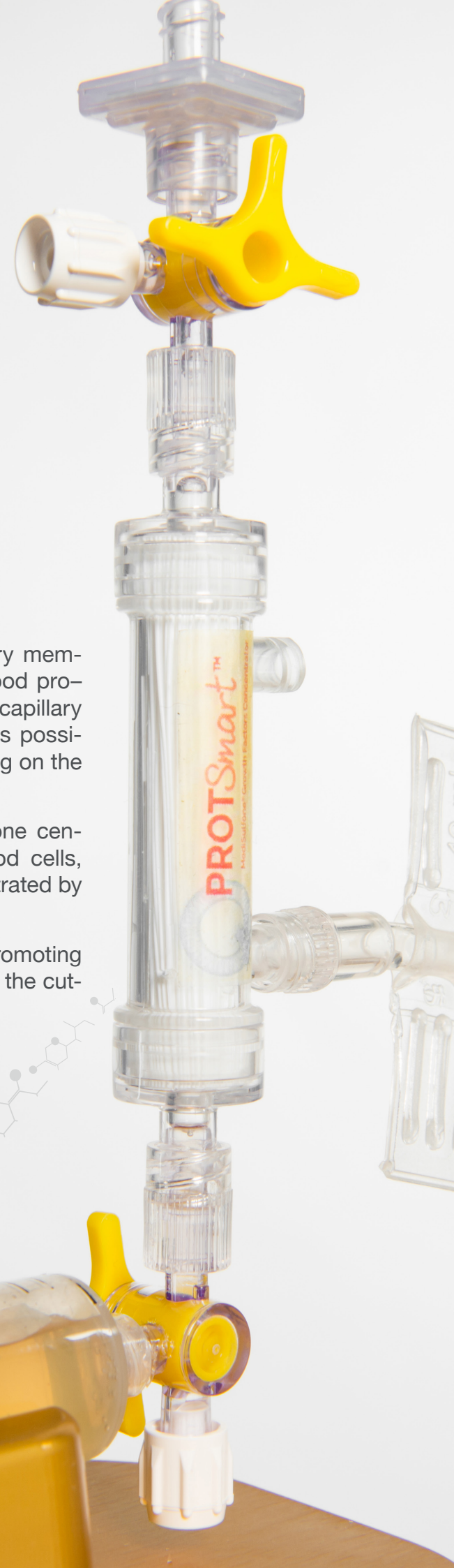
WHAT IS PROTSMART™

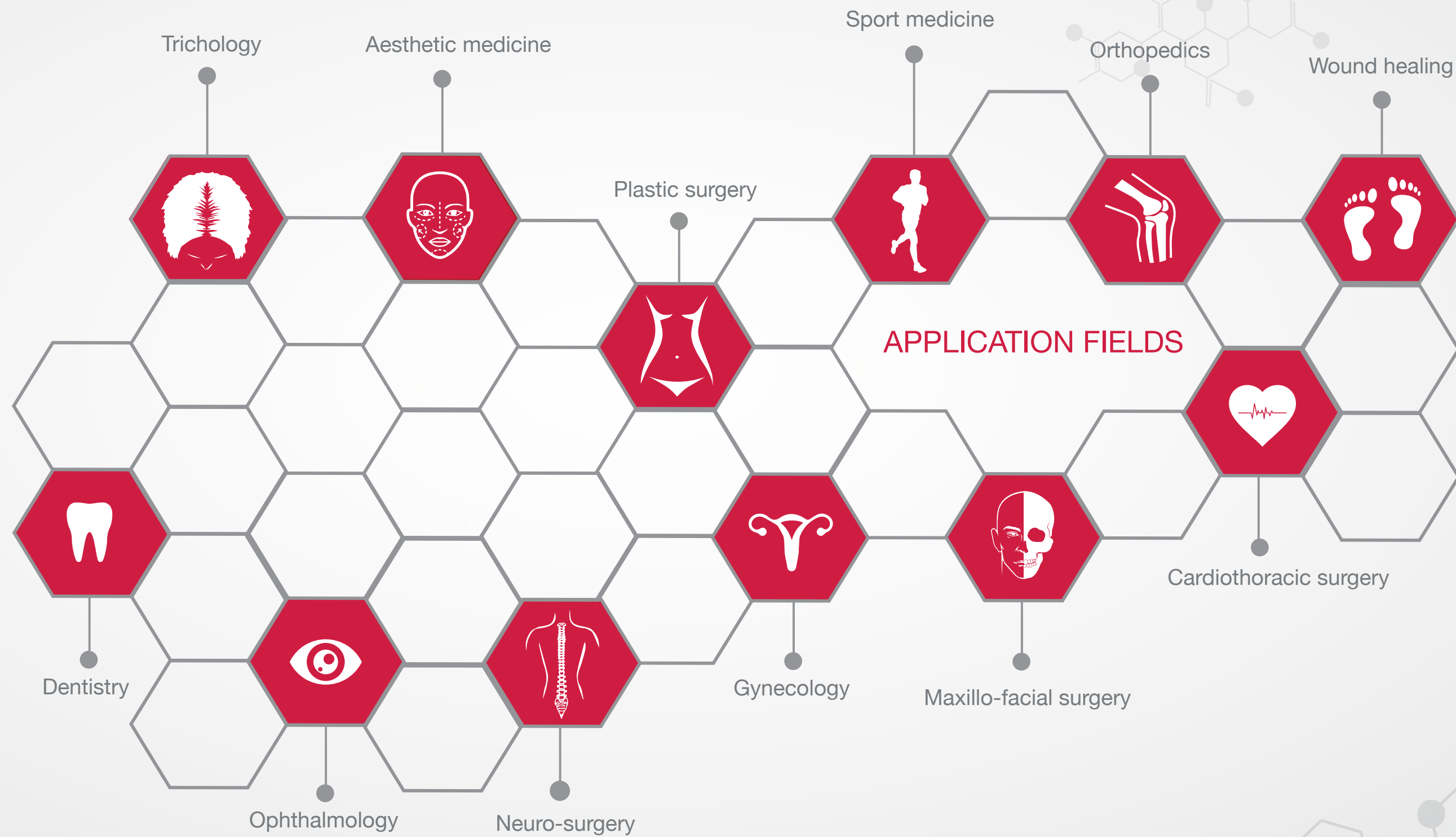
When infiltrated in the area to treat, PRP accelerates the cell proliferation and favors the autologous regeneration of cells and tissues, cicatrization, wound healing, reparation processes, a higher production of fibroblasts and consequently, collagen, and the revascularization of the treated tissues by means of a bio-stimulation process. These regeneration processes have to be stimulated in several different therapeutic applications that range from cosmetic medicine, orthopedics, surgery, etc.

The PRP and PPP preparation protocols are different from one another, but they generally consist of the collection of autologous blood, the centrifugation of tubes or syringes to separate red blood cells from plasma and other cellular components such as leukocytes and platelets and in isolation (by other followup centrifugations or by means of a selective aspiration) the plasma phase enriched with platelets (PRP) or poor in platelets (PPP).

ProtSmart™ is a hollow capillary membrane that can be used downstream of the blood product's preparation method in order to concentrate better on the platelets and the plasma proteins of the PPP. The result is a concentration of solutes over a certain molecular weight (greater than the pore size) on one side of the membrane and a loss of liquids and solutes of small size (smaller than the pore size) in the other. This passage is particularly useful if a blood product of high concentrations in small volumes is desired. Indeed, the two available ProtSmart™ models allow one to obtain autologous preparations in few ml with platelet and protein concentrations that achieve 4-6 times compared to the basal concentrations in whole blood.

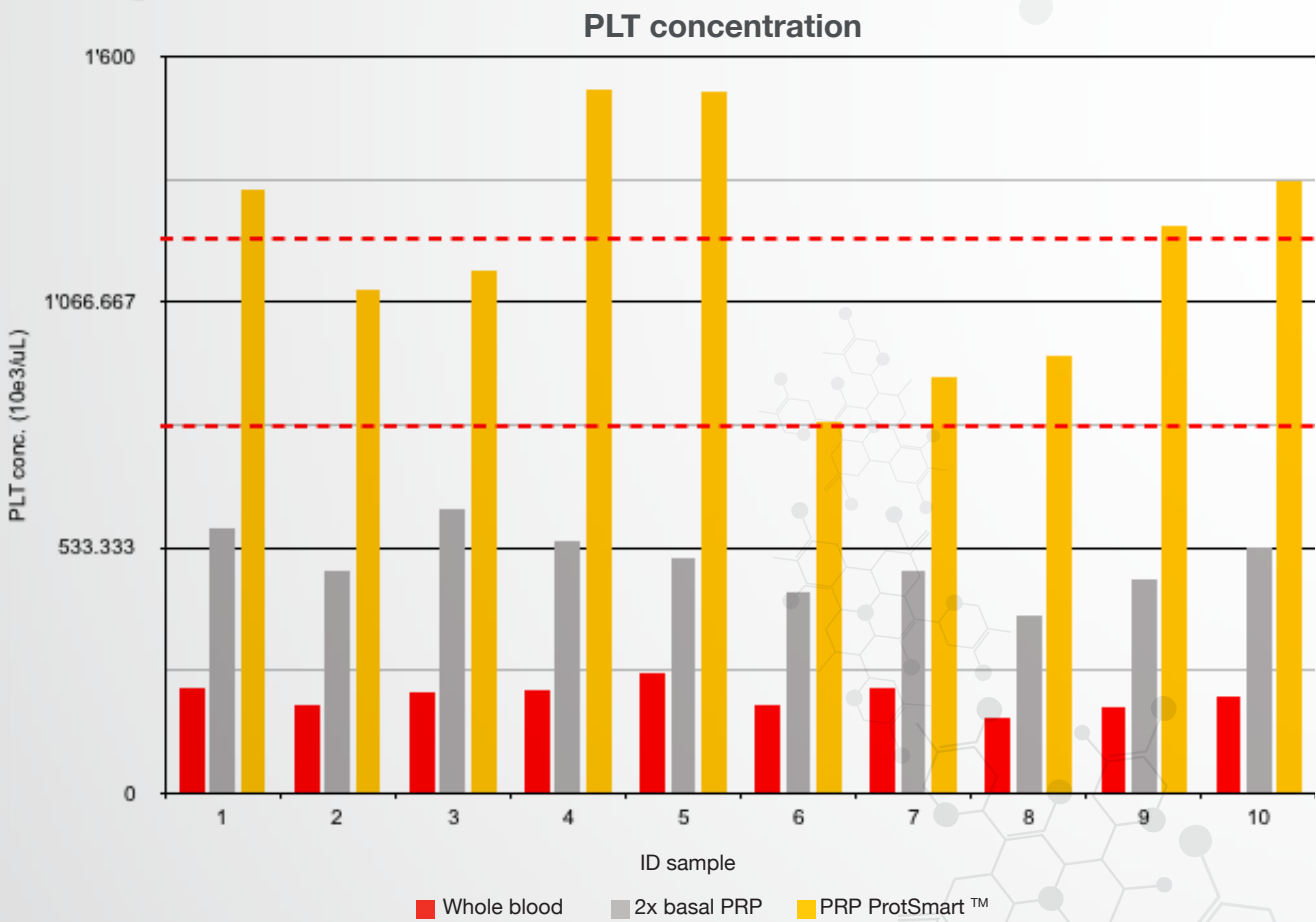
The concentration occurs with a simple mechanical process and it is aided by the GrowSmart accessory that allows it to push the plasma to be concentrated inside the ProtSmart™ device. During this push phase, the pressure gradient that creates between the two sides of the hollow capillary membrane allows for the overflow of the plasma water from the membrane pores. When the procedure is complete, aspiration recovers the concentrated plasma inside the ProtSmart™ device. This concentrate can be used for the infiltration in the area to be treated.



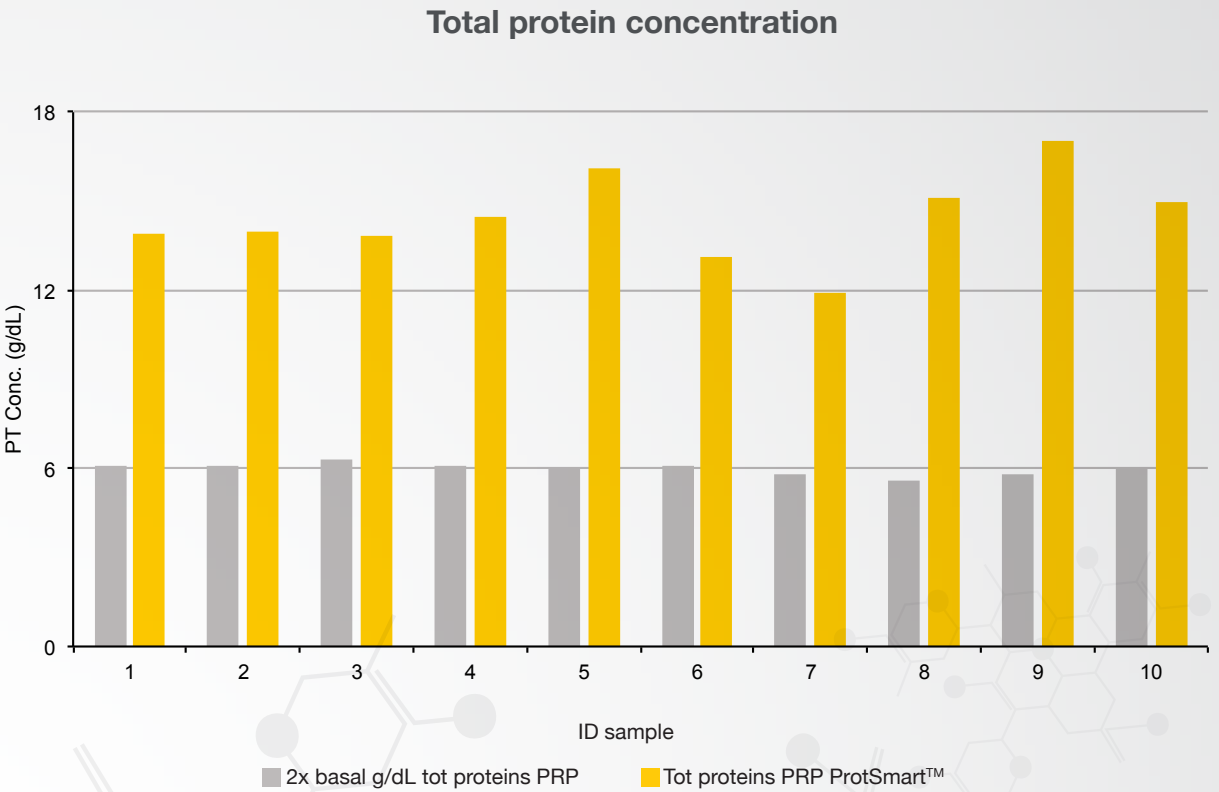


PERFORMANCE TESTS OF 10 PROTSMART™ DEVICES

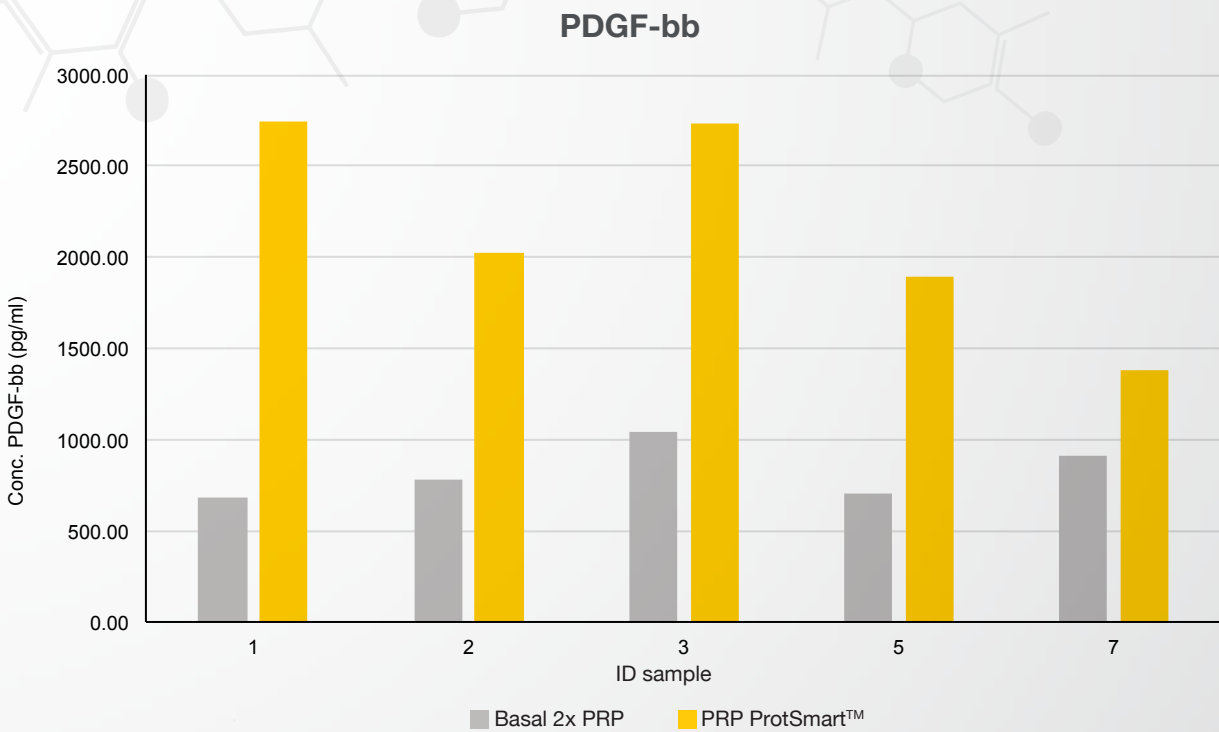
Doc. Laura Mazzucco – Alessandria Hospital blood transfusion center
 Doc. Nadia Dani – BioClarma srl – Turin



Platelets concentration measured in whole blood, in basal PRP and concentrated PRP by ProtSmart™. The concentration of platelets increases about 4 times compared to whole blood and at least 2 times compared to PRP obtained with each centrifugation. The red dashed lines limit the range of platelet concentration.

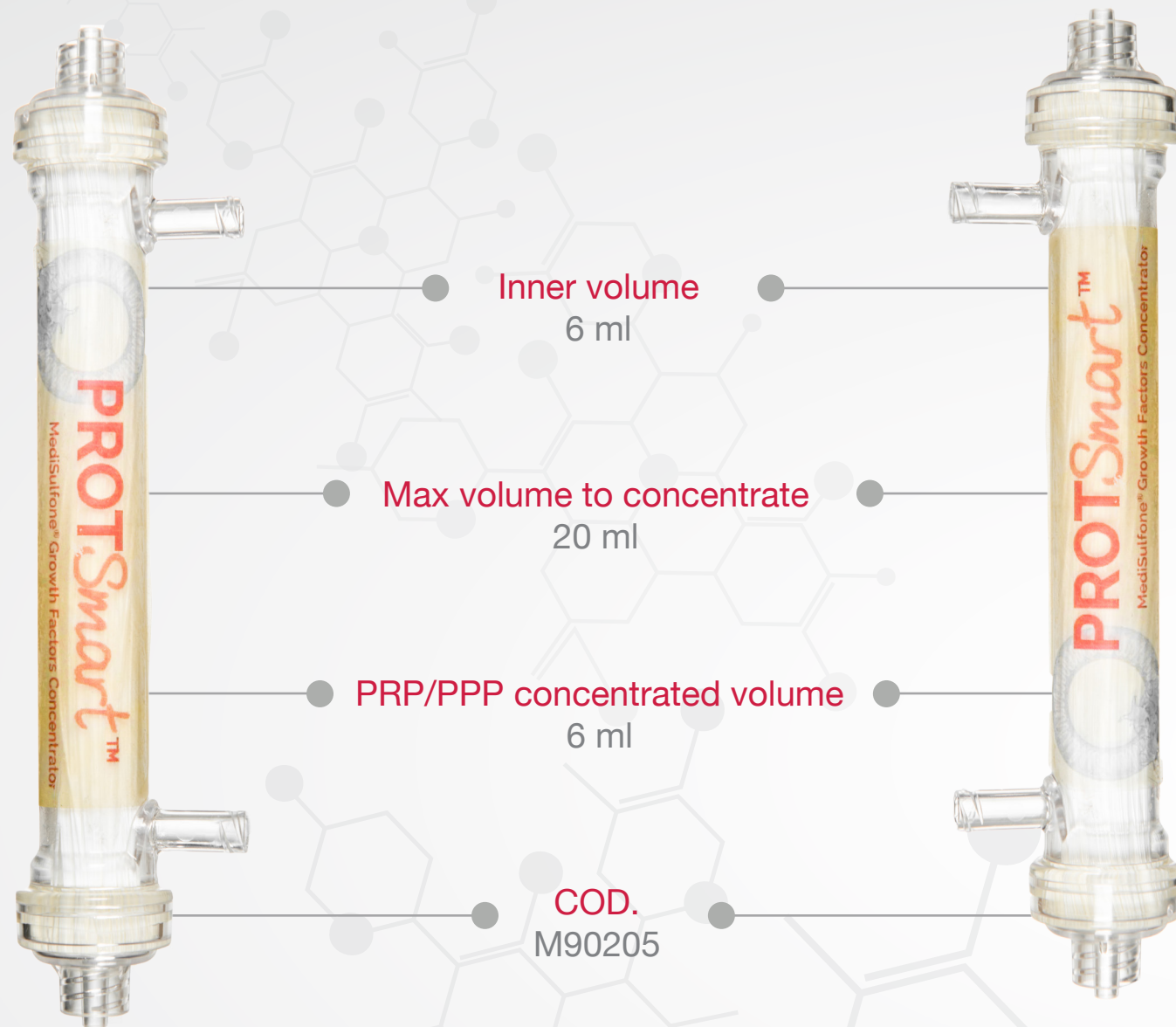


Total protein concentration in basal PRP and concentrated PRP measured by ProtSmart™. The total plasma proteins including autologous growth factors increase their concentration by about 2.2-3 times compared to the basal PRP concentration obtained by a single centrifugation.

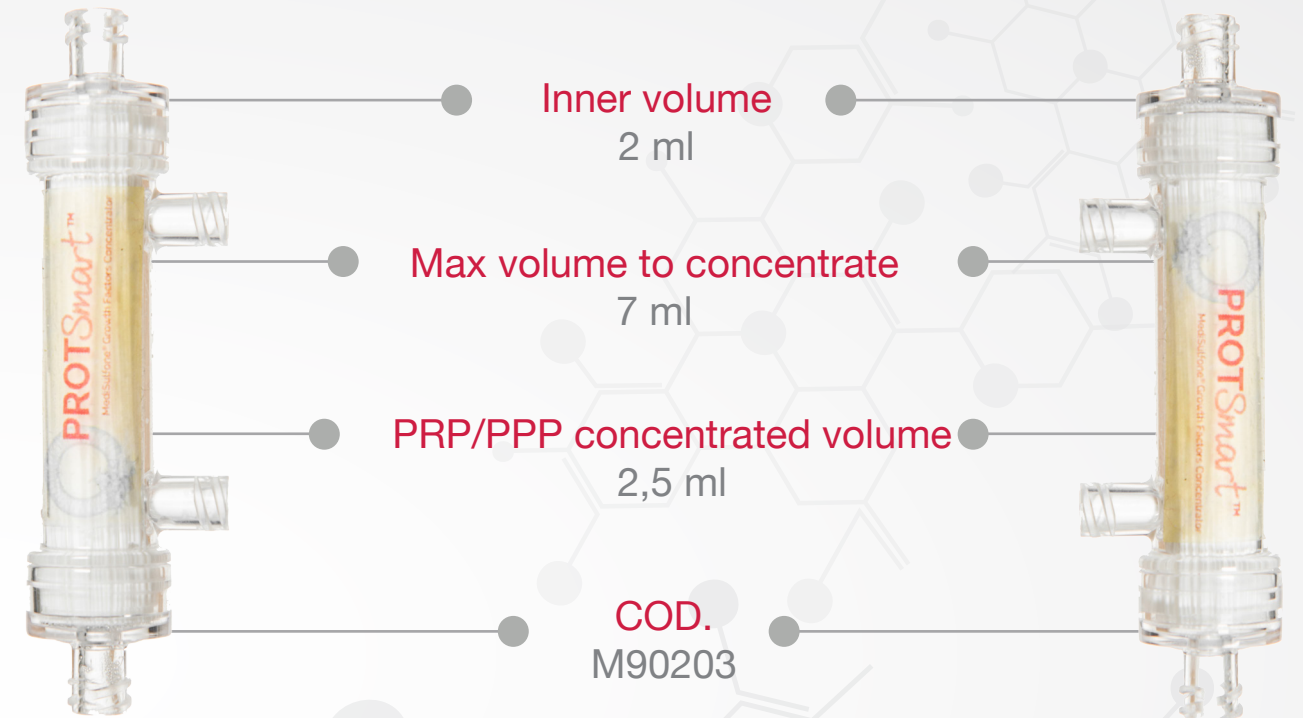


Dosage of the PDGF growth factor (BB isoform as it is more involved in the regeneration processes) by the Bioplex, Biorad, method.
 PRP ProtSmart™: PRP obtained by the concentration with a ProtSmart™ device;
 Basal 2x PRP: PRP obtained by a single centrifugation from whole blood.

PROTSMART™ 6



PROTSMART™ 2



GROWSMART

Mechanical concentration accessory compatible with 20 ml syringes.



Medica S.p.A.
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41036 Medolla (MO)
I - Italy

Tel +39 0535 51159
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Mabelmed Swiss SA
Via Mesolcina 2
6500 Bellinzona
CH - Switzerland

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www.mabelmed.swiss
info@mabelmed.swiss

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