

Regenerative Medicine of Quality in Dental Implantology

Alcaraz Rubio Jesús*

Coordinator of the Unit of Hematology in Union Hospital of Murcia, Murcia and the Regenerative Therapy unit of the Miraculous, Madrid, Spain

***Corresponding Author:** Alcaraz Rubio Jesús, Coordinator of the Unit of Hematology in Union Hospital of Murcia, Murcia and the Regenerative Therapy unit of the Miraculous, Madrid, Spain.

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Today the expansion of therapies with Plasma Growth Factors, which is commonly known as platelet-rich plasma, is giving rise to the offer of all types of treatments aimed at dental implantology in order to improve both recovery of alveolar bed and fixation of the teeth. For a purely lucrative purpose, most techniques performed lack the minimum guarantees of manipulation of the whole blood, as well as previous serological tests in the patient, that causes a loss of guarantee and quality in the applied treatment. In this sense, the majority of drug regulatory agencies have a registry of all medical centers that produce autologous plasma growth factors, specifying the clinical application that will be given, type of technique used and incidents occurring during or after treatment.

PRP is an autologous concentration of human platelets in a small volume of plasma which represents an increase over normal baseline platelet levels, making it a source of easy access to growth factors contained therein. It has a pH between 6.5 and 6.7. It comes from the patient's own blood, so it is free of communicable disease and cannot cause hypersensitivity reactions. The platelet count of PRP is optimal debatable. According to the Competent Authority, it must contain a levels of platelets higher than the basal serum levels considered normal (between 200,000 and 450,000 platelets/mm³). But increasingly the authors dedicated to this area considered a PRP quality when platelet counts obtained in the final product exceeds 1,000,000/mm³.

Methods of obtaining and preparing PRP are very diverse, depending on whether a single or double centrifugation procedure is used, the same time and the type of filter used and which has more than 40 currently in the market.

Regarding the temperature, according to most experts consulted for the production of a proper PRP, optimal temperature during the process should be in the range between 16 and 22°C. This temperature range is the greater capacity of concentration of platelet and growth factors, as is maintaining a greater platelet survival regardless of the type of procedure and filter used with a mean platelet count of 1,150,000/mm³ range (750,000 to 1,500,000/mm³), as well as levels of platelet and plasma factors growth between 5 and 7 times higher than normal levels found in peripheral blood [1,2].

Depending mainly on the type of filter or pipetting and centrifugation procedure used, can obtain different plasma components, e.g. platelet-rich in growth factors, platelet-rich plasma and poor in growth factors, plasma rich in growth factors and poor in platelets or plasma rich in platelets and leukocytes.

It has not found a clear correlation between the ability of higher platelet concentration levels and platelet growth factors determined in the final product regardless of the filter type and process used in its manufacture. Neither difference was observed in her final product regardless of the type of procedure and filter used in relation to age and gender. It seems certain according to recent studies that these plasmas rich in leukocytes contain higher levels of growth factors VEGF and TGF-B, while the platelet rich plasma without use of the buffy coat concentrate would be achieved as many factors PDGF growth rate and IGF-1 [1,2].

Activation of the PRP requires replacement of calcium and initiation of the blood coagulation cascade. For Anitua authors as this is achieved by adding calcium chloride at 1% (1cc), others as Marx used in conjunction with this bovine thrombin solution (1,5cc); unlike Anitua not describe its use, there is some controversy as to the use thereof as thrombin antibodies have been detected in patients who have been treated by activating the PRP with this procedure [4].

Using a larger amount of activator solution, far from being beneficial, is counterproductive, because a larger volume of this solution does not accelerate the process of coagulation activation, but its rate of formation reduced or completely inhibited by diluting the fibrinogen, an important factor clot formation [3,4].

Finally, the use of systemic or intravenous PRP does not require prior activation of the end product, since its entry into the bloodstream produces natural activation through own serum ionized calcium.

Basically, prescribing this autologous concentrate should be performed by physicians, dentists or podiatrists within their field of clinical action. Although preparation is by a third party ultimately responsible to ensure the characteristics of the person will be prescriptive.

Prior to obtaining the product, the patient must undergo a pre-analytical control serological, biochemical and hematological to verify the suitability or otherwise of treatment. With respect to the latter it must be said that countries like Argentina have specific rules for obtaining PRP plasma and the various fractions exclusive legal hematologist, applying the same rules as any type of blood product for autotransfusion.

During the production process, although there are numerous protocols as mentioned earlier, the current regulations, distinguishes on open procurement procedure, where no direct exposure to blood or any of its components during the process of handling the environment, in which case and following the rules of each region, the entire procedure should be performed under a sterile laminar flow hood or closed procedure, using specific filters, in which case, the rules must be followed manufacturer specific.

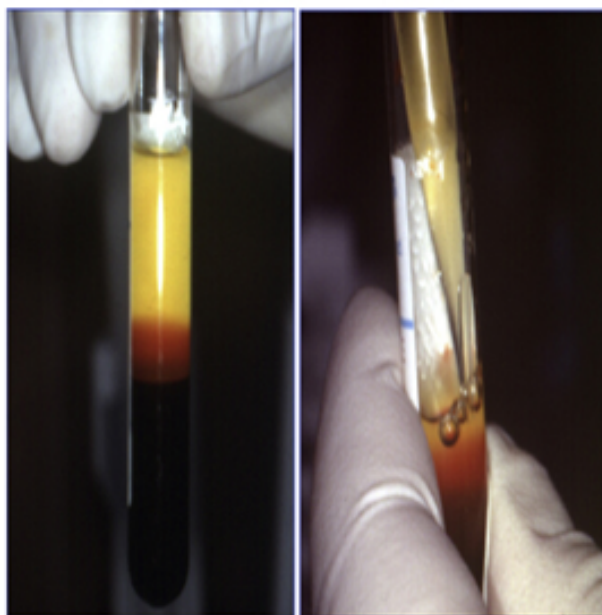


Figure 1: Example of obtaining platelet-rich plasma by open technique.



Figure 2: Example of obtaining platelet-rich plasma by closed technique.

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