Dental Research Journal

Letter to Editor

Plasma rich in growth factors in dogs: Two sides of the same coin

Dear Editor,

We have read with interest the recent article in Dental Research Journal entitled "Socket preservation using freeze-dried bone allograft (FDBA) with and without plasma rich in growth factors (PRGF) in dogs" by Samandari *et al*.[1] The aim of this study was to compare the effect of the combined use of PRGF and FDBA on bone formation versus FDBA alone or control group filled with blood clot. This research was carried out in experimental sockets in four dogs.

We would like to make some considerations regarding the use of PRGF in dogs. In the materials and methods section of this paper, Samandari *et al*. describe the preparation of PRGF in dogs using BTI-Biotechnology Institute's Technology. The authors provide centrifugation conditions of 2000 rpm for 8 min. In addition, they divide the plasma column into three fractions and use the one closest to the leukocytes (fraction 3).

First, we would like to point out that the centrifugation parameters referenced by the authors are not accurate, since the centrifuge PRGF system IV is a medical device that presents fixed centrifuge programs, and their modification by the user is not possible. In addition, the authors separate three fractions in plasma despite it has been extensively shown in humans that three fractions are not necessary since just the two fractions protocol presents a similar biological effect.[2] Furthermore, the protocol for humans has recently evolved, and in the light of scientific evidence, it has been reduced both the amount of anticoagulant and the activator.[3]

Second, we do not observe that the authors have performed a characterization of the product, nor do they refer to another previous publication that has carried out the PRGF characterization in dogs. We definitely believe that it is fundamental to know the product that is applied in the treatment.

To the best of our knowledge, there are at least another three studies[4-6] in which PRGF has been applied in dogs during 2016, in addition to the cited study.[1] These studies use different protocols for obtaining PRGF but have in common that none of them characterizes the PRGF obtained in dogs. Our aim here is not to criticize the design or the conclusions of the different investigations, but only to highlight the great variability of protocols used and, especially the lack of characterization, reported in those studies. This is, especially, relevant and should be taken into account when comparing the results of different studies and thus avoiding the irreproducibility of many of them or when the advances found in animal experimentation are extrapolated to humans.[7,8] We encourage the different authors to carry out the characterization of the PRGF or to present it in their publications if they have already performed it.

Platelet-rich plasma (PRP) was originally developed in humans, and then, its use has spread in veterinary. It would be desirable not to fail again on mistakes of the past and try to achieve a standardization of veterinary products.[9] As any biomedical product, PRGF technology is permanently evolving, but it preserves a clear and consistent philosophy: it is a type of PRP obtained from small volumes of blood through a single centrifugation and subsequent fractionation of the plasma.[10] It is moderately enriched in platelets and does not contain leukocytes or erythrocytes (classified as pure-PRP). In addition, the activation is performed solely with calcium chloride.[10] All these premises must be followed to affirm that PRGF technology is being used.

As it is already known, the blood of each animal species has different characteristics that do not necessarily coincide with the human one.[11] Recently, we assayed the human PRGF protocol in a model of peri-implant gap bone in rabbits but having previously characterized the rabbit-based PRGF and thus observing that it was similar to the human one.[12] However, in another research carried out in a sheep model of nerve regeneration, the PRGF protocol was adapted to obtain a PRGF with similar characteristics to those of humans.[13]

The translation of PRGF from humans to dogs is dealing with two sides of the same coin. On the one side, human and dogs are different species; but on the other side, we need to properly transfer and translate our 20 years' experience in humans to the treatment of canine injuries. In summary, we encourage researchers to use PRGF technology both in research with animal models as well as in veterinary treatments but always characterizing the obtained product since we should not leave our knowledge to get lost in translation.

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Nil.

Conflicts of interest

E. A. is the Scientific Director of and R. P. and G. O. are scientists at BTI - Biotechnology Institute, a dental implant company that investigates in the fields of oral implantology and PRGF-endoret technology.

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