



Wonder if your pet is a candidate for this therapy? Call the hospital to speak with Dr.

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## Platelet-Rich Plasma

### Basic Biology Yields New Treatment

#### Options

Platelet-Rich Plasma (PRP) is so simple, it almost begs the question why we didn't think of this sooner. While we have known about PRP and how to make it for many years, only in the past 3-4 years has it gained popularity as a serious therapeutic option. In 2008, PRP began gaining popularity in human sports medicine as an adjunctive treatment for orthopedic injuries. It has gained significant media attention thanks to its use by professional athletes to treat numerous types of injuries. It is now becoming available for use in veterinary medicine in both equine and small animal medicine to treat a host of injuries and diseases.

#### What is PRP and How Does It Work

PRP is made from whole blood extracted from the patient. As with other regenerative techniques such as stem cell therapy and IRAP, the starting material comes from the patient itself. The obvious advantage working with the patient's own tissue is that there is no need for an external donor and no possibility of rejection or "graft vs host" disease. Regenerative techniques also use tissues for which there is usually an ample supply in most patients; ie blood, fat, etc. A very small sample (30 to 50ml) of blood is required and yields between ½ and 2ml of PRP for injection.

In the case of PRP both the plasma and the cells are of importance to achieve a therapeutic effect. Platelets used to be thought of primarily as "cellular plugs" involved in blood clotting and indeed this is an important function. It has become apparent in the past twenty years or so that platelets are also a major player in normal tissue healing and regeneration. They are in fact the "first responders" to injury and start the whole process of healing almost immediately.

When platelets are activated by a wound or injury, in addition to their clotting functions they begin producing and secreting a "soup" of various growth factors, hormones and other signalling molecules. This generates a complex response by various tissues and cell types involved in regeneration and healing. These responses range from rapid development of blood vessels and blood supply in the affected area to the production of fibrin matrix. Fibrin matrix is not only the first step in scar tissue formation but helps trap the platelets and hold them in place. The platelets then continue to produce and slowly release these factors and chemical messengers for their remaining life span (approximately 5 to 10 days).

The plasma component itself can also play a role in tissue healing. Not only is it a physical carrier for the platelets but plasma also contains a large number of "acute phase



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proteins” which are very important in the response to injury and inflammation. Depending on the technique used to produce the PRP, it may contain a large number of white blood cells which are involved in mediating numerous inflammatory and repair responses. This is in fact the basis for another technique known as IRAP which will be discussed later.

## **Applications for Treatment**

As PRP is a targeted but non-specific treatment, it could potentially be used to treat almost any type of injury or wound. This technique is most useful for treating acute injuries simply because of the basic biology involved. It should be noted however that PRP has been used to successfully aid in the treatment of some chronic diseases and injuries, especially where an acute aggravation has occurred (we have in fact recently used it for this purpose in a dog in the hospital). Once the PRP has been obtained it is either directly injected to the site of injury, with or without ultrasound guidance, or applied topically to the affected area. PRP may be applied with or without the concurrent administration of stem cells.

In equine medicine, the most common uses for PRP involve ligament and tendon injuries which are notoriously difficult and slow to heal. Numerous studies performed in the past several years have demonstrated that the use of PRP in these cases both dramatically reduced healing times for these types of injuries and achieved better results than with conventional therapy alone. Numerous studies and clinical trials are currently underway to evaluate the effectiveness of this treatment in a variety of other applications.

PRP has a number of advantages over conventional therapy alone and some other techniques. It involves the collection of a small volume of blood and 20 to 30 minutes of processing which can be performed stall-side. The PRP is then ready for use. It is also far less expensive than other regenerative techniques – we will be charging somewhere around \$350 + HST for the procedure. In certain circumstances the use of PRP may actually dramatically reduce the total cost of treatment due to the more rapid response and decreased healing time.

The other major attraction is that because PRP is essentially a blood product, it can be stored. Blood products may be stored for significant periods of time in either a refrigerator or freezer for future use. No special equipment or storage facilities are required – we are in fact storing left-over PRP from the dog mentioned earlier in case another treatment is required! This makes it possible to do multiple treatments over time from a single procedure.

## **PRP – Not Just for Horses!**

We are happy to accept referrals, small or large animal, from other veterinarians for clients seeking any of these therapies. Arrangements for consultations can be made by contacting the hospital.

If you have questions or interest in this therapy, please feel free to call the hospital.