

Biologics: PRP and “Stem” Cells

by Dr. Steven Chudik

During the past decade, there has been a lot of excitement regarding the use of “biologics” such as growth factors and stem cells and their claimed ability to cure almost any musculoskeletal (bone, tendon, muscle or joint) condition. There are anecdotal stories about famous athletes with sprained joints, torn tendons, and damaged cartilage travelling to special clinics or doctors to receive injections of platelet rich plasma (PRP), stem cells or now even amniotic fluid. There are many reports crediting these injections for allowing athletes and other patients to return to their activities more quickly than traditional treatments alone. Unfortunately, many companies that sell these biologics provide misinformation through direct-to-consumer marketing about these largely unproven “biologic” treatments.

Despite the growing publicity, popularity and use, there are many unanswered questions and a lack of proof that biologic treatments actually work. The composition and bioactivity are variable and the mechanism of action is unknown. Biologics require more study and should include a minimum of reported information for the consumer just as packaged food labels provide the ingredients and the amounts of nutrients.



What is PRP?

Blood consists of fluid called plasma and solid components including red blood cells, white blood cells, platelets and other circulating proteins. The platelets are most known for their role in clotting blood to stop active bleeding. To initiate a cascade of events in the healing process, they contain hundreds of small proteins called growth factors which are released from platelets during bleeding from injuries.

PRP is created by drawing a sample of blood from a patient and placing it in a centrifuge apparatus which spins the blood to help separate the platelets from the blood. The separated component of plasma concentrated with platelets is obtained, placed in a syringe and injected back into the patient at the desired injury site. There are different methods of preparation that result in either less platelets and less white blood cells and others that have more platelets, but also more white blood cells. The blood drawing and PRP injection procedure can be performed in the office and is often repeated multiple times (up to three) at one-week intervals. Alternatively, surgeons may also choose to perform the blood draw and PRP injection procedure in the operating room and inject the PRP at the surgical repair site. It is not known exactly how PRP works but theoretically, by injecting more platelets to release more platelet-derived growth factor around healing tissues, doctors hope it stimulates a stronger healing response to repair tissues faster and stronger.

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