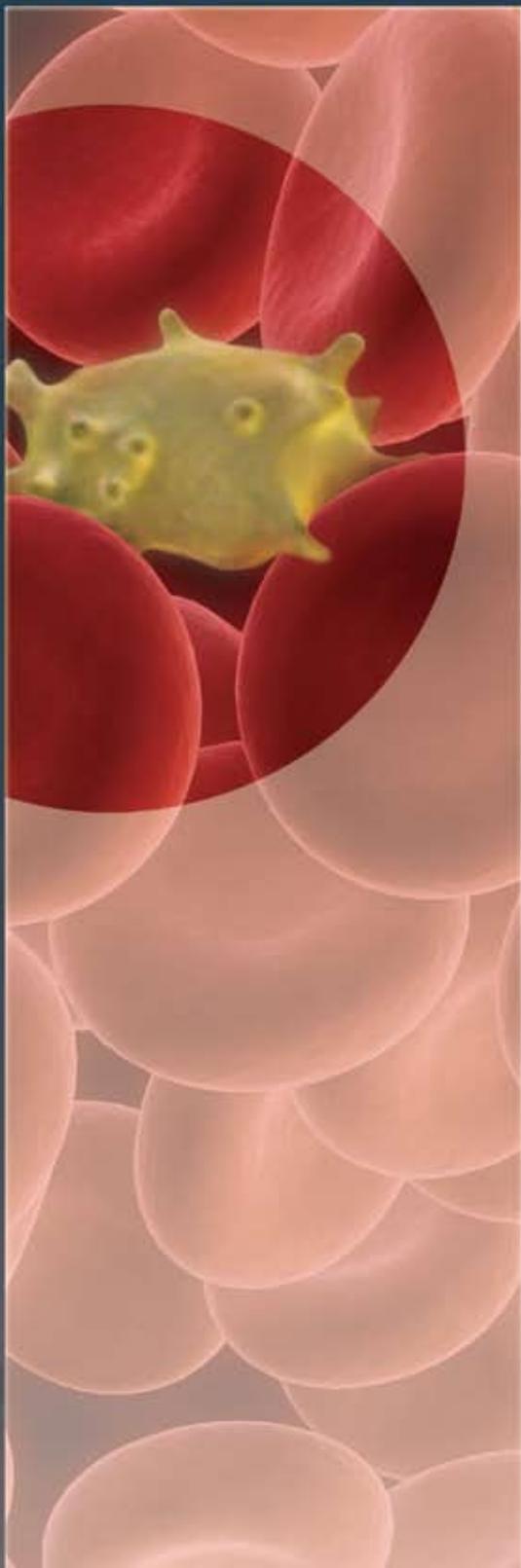


Arthrex ACP™ Double Syringe System

Autologous Conditioned Plasma



Arthrex® 

ARTHREX ACP

Introduction

Autologous blood products have created a growing interest for use in a number of orthopaedic therapies. The healing effects of plasma are supported by growth factors released by platelets. These growth factors induce a healing process wherever they are applied.



Double Syringe



Cap for Double Syringe



Rotor with Buckets

Features and Benefits:

- The Arthrex ACP System is a cost-effective method of concentrating growth factors for therapeutic use.
- Producing ACP (Autologous Conditioned Plasma) with the Arthrex ACP System can be performed within minutes. Typical platelet rich plasma (PRP) systems take up to 45 minutes to process the blood for application, thereby delaying treatment and increasing the cost of the procedure.
- The ACP System can be used in a clinic or under sterile conditions in an OR setting. The unique double syringe design allows for convenient and safe handling, as the whole preparation process takes place in a closed system.
- The cost of the ACP System is more affordable than conventional PRP devices.

DIRECTIONS FOR USE

Procedure



1

Prior to withdrawing ACD-A, prime the outer and inner syringes by pulling each plunger completely back and forward before starting the process. Withdraw approximately 1 mL ACD-A into the syringe. *Note: If ACP is going to be used within thirty minutes of blood withdrawal, the use of ACD-A is not required.*



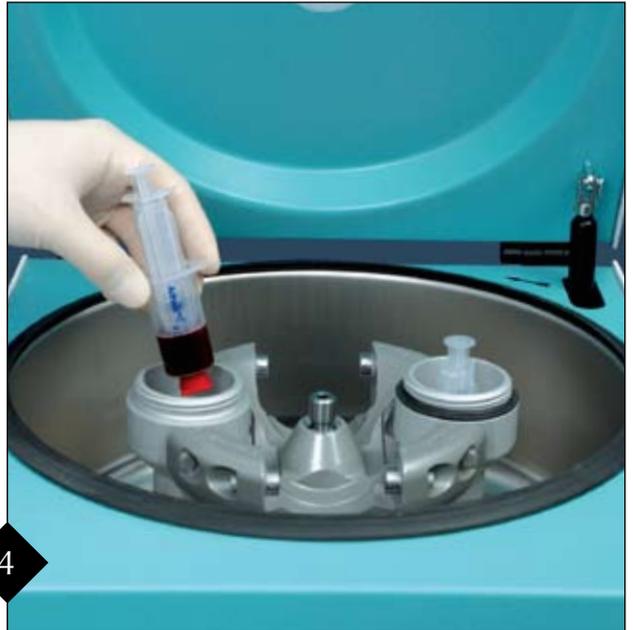
2

Withdraw approximately 10 cc of venous blood and seal the syringe with the red cap. An 18 - 20 gauge butterfly is recommended to draw the blood.



3

Gently rotate the syringe in order to mix the blood and the ACD-A.

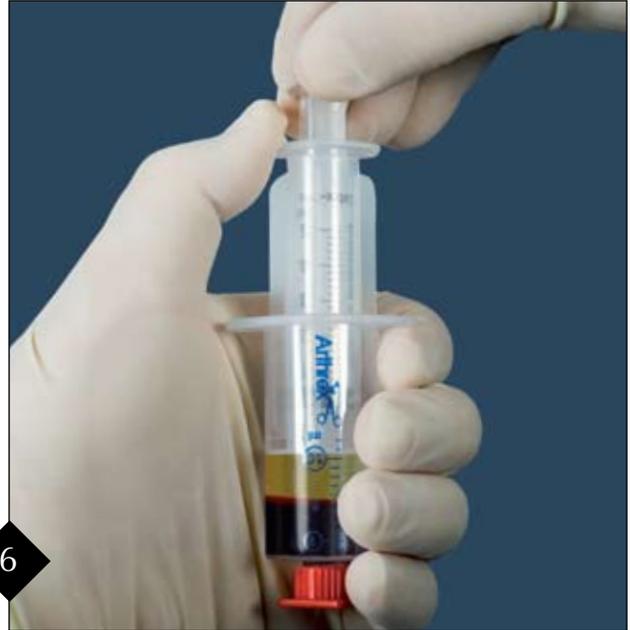


4

Place the syringe into one bucket and an appropriate Counterbalance in the opposite bucket.



Run the centrifuge at 1500 rpm for 5 minutes. Remove the syringe, taking care to keep it in an upright position to avoid mixing the plasma and red blood cells.



In order to transfer 3 - 5 mL of supernatant (ACP) from the larger outer syringe into the small inner syringe, slowly push down on the outer syringe, while slowly pulling up the plunger of the small inner syringe.



Unscrew the small inner syringe and place a needle on to it. The ACP is ready for use at the point of care. The ACP can also be transferred into a sterile basin on the sterile field and then transferred into a 5 mL syringe for use. The ACP should be used within four hours after the blood draw.

Product and Ordering Information:

ACP/ Double Syringe with Cap	ABS-10010S
Anticoagulant ACD-A, 4 mL	ABS-10007
Anticoagulant ACD-A 50 mL	ABS-10008
Centrifuge	ABS-10020
Rotor Set with Buckets and Caps	ABS-10021S
Bucket	ABS-10022
Bucket Cap	ABS-10023
Counterbalance	ABS-10026

MECHANISM OF ACTION

Outside the bloodstream, platelets become activated and release proliferative and morphogenic proteins. These growth factors are known to be relevant for healing in a variety of tissue types including bone, tendon, cartilage and skin.¹ Their main actions are:

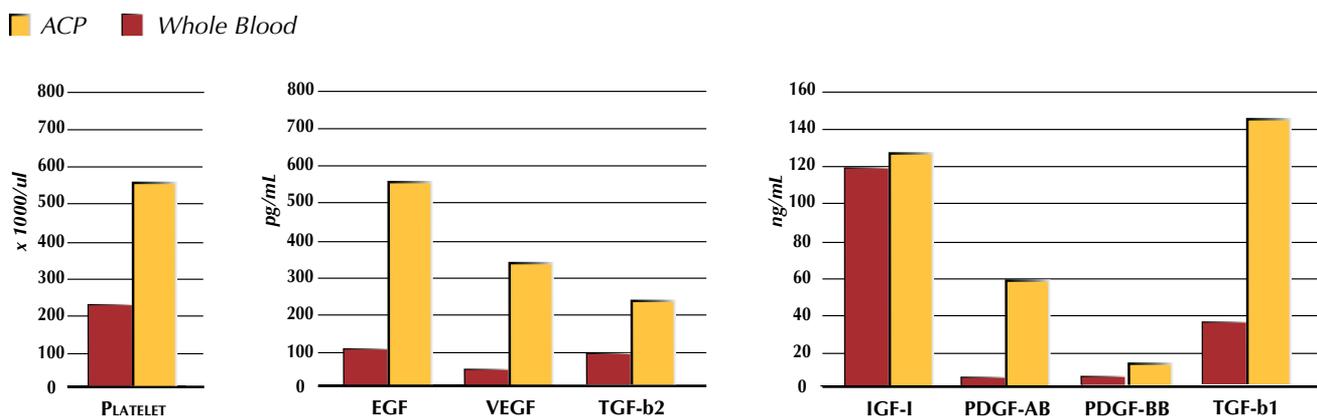
- Induce proliferation and differentiation of various cell types (e.g., stem cell, osteoblast, epidermal cells)
- Enhance/modulate production of collagen, proteoglycan and Tissue Inhibitor of Metalloproteinases (TIMP)
- Stimulate angiogenesis
- Chemotaxis

These benefits seem to involve synergistic effects of growth factors.^{2,3,4}

In order to demonstrate the high levels of seven well documented common growth factors^{2,5} in ACP vs. whole blood, Arthrex prepared ACP from the venous blood of 12 healthy donors and analyzed the concentration of the following growth factors:

FACTOR	NAME	FORMATION
PDGF AB and BB	Platelet-Derived Growth Factor	Activated Thrombocytes
TGF Beta 1 and Beta 2	Transforming Growth Factor Beta	Activated Thrombocytes
IGF	Insulin-like Growth Factor	Activated Thrombocytes
EGF	Epidermal Growth Factor	Activated Thrombocytes
VEGF	Vascular Endothelial Growth Factor	Leukocytes, Endothelium

We found the density of platelets to be more than twice as high in the ACP vs. whole blood. The concentration levels of all growth factors measured were significantly higher in the ACP when compared to whole blood. The testing revealed an increase in concentration of 25x for PDGF-AB. The concentration was higher by a factor of 5 to 11 for EGF, VEGF, and PDGF BB and up to 5 for IGF 1, TGF β 1 and β 2. These concentrations are within the same order of magnitude when compared to the results in another study designed to determine growth factor levels in PRP.⁵



References:

- 1 Richter W., *Alternativen und Visionen zur Verbesserung der Knorpelregeneration*, Trauma Berufskrankh., 2002, 4, 100-103
- 2 Borzini P. and Mazzucco L., *Tissue Regeneration and in Loco Administration of Platelet Derivates: Clinical Outcomes, Heterogeneous Products, and Heterogeneity of Effector Mechanisms*; Transfusion, 2005, 45, 1759 -1767
- 3 Edwards et al., *Transforming Growth Factor Beta Modulates the Expression of Collagenase and Metalloproteinase Inhibitor*, The EMBO Journal, 1987, 6, 7, 1899-1904
- 4 Lynch et al., *Role of Platelet-derived Growth Factor in Wound Healing: Synergistic Effects with other Growth Factors*, Proc. Natl. Acad. Sci. USA, 1987, 84, 7696-7700
- 5 Weibrich et al., *Growth Factor Levels in PRP and Correlations with Donor age, sex, and Platelet Count*, Journal of Cran-Max. Surgery, 2002, 30, 97-102



This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience and should conduct a thorough review of pertinent medical literature and the product's Directions For Use.



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The Double Syringe (ACP) System is used to facilitate the safe and rapid preparation of autologous platelet-rich-plasma (PRP) from a small sample of blood at the patient's point of care. The PRP can be mixed with autograft and allograft bone prior to application to an orthopaedic surgical site as deemed necessary by the clinical use requirements.