PLATELET-RICH PLASMA AS TREATMENT FOR OSTEOARTHROSIS IN DOGS

Anna Moreno Terrón
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Introduction

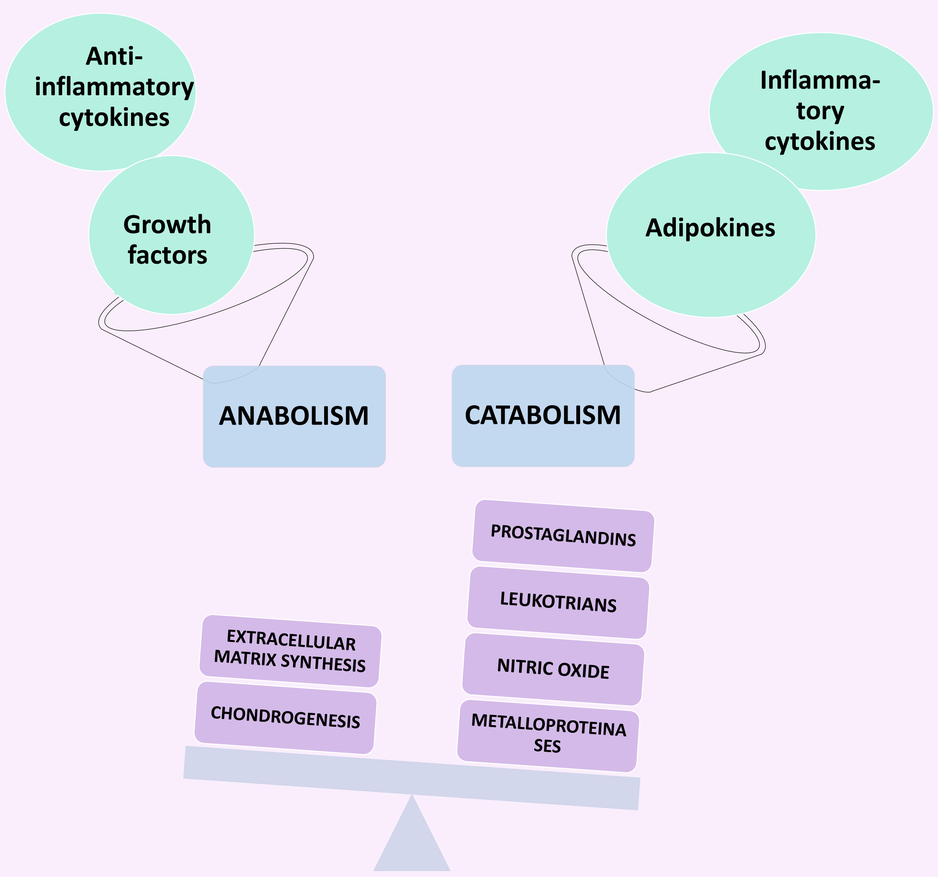
The Osteoarthrosis (OA) is one of the most frequent chronic diseases within the veterinary medicine that presents pain and dysfunction in the joints.

The current treatment, nowadays, is still a challenge. New researches are being done testing innovative regenerative therapies, as for example the usage of Platelet-Rich Plasma (PRP)

Objectives

- To analyse different researches about the function of PRP in cartilage.
- To study the usage of PRP as an alternative to treat the osteoarthrosis in dogs.
- To define the composition of the PRP.
- To evaluate different methods to obtain PRP and determine which is the most effective for treating OA.
- To determine which therapy should be used for the treatment of osteoarthrosis in dogs.

Osteoarthrosis



What is PRP?

The PRP is the plasma fraction, obtained from the centrifugation of the patient's own blood, which contains a higher platelet concentration than the basal level.

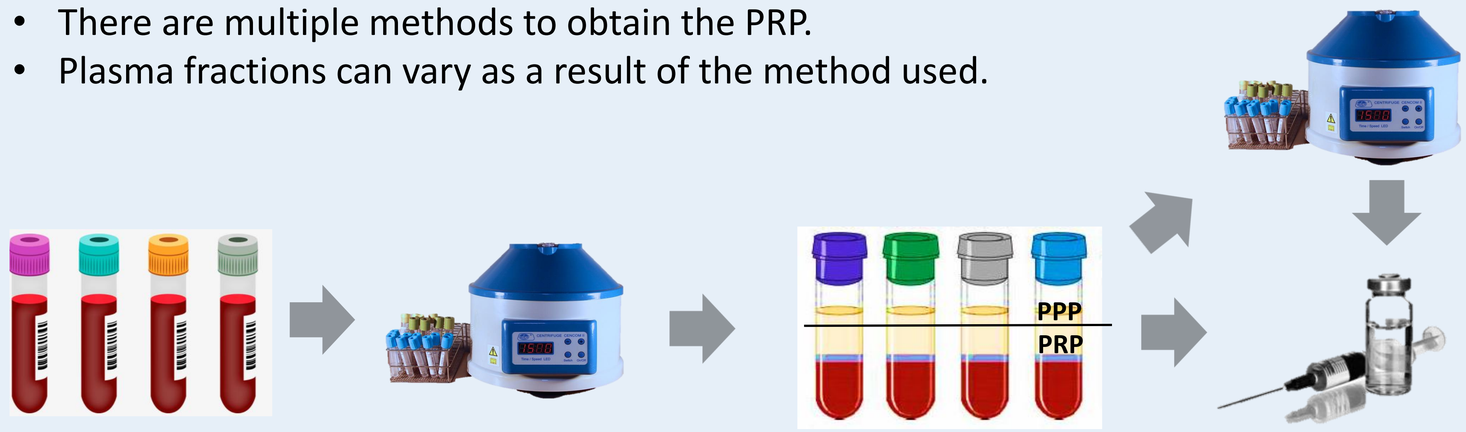
Why can PRP be useful?

The PRP contains growth factors which stimulate the anabolism of the cartilage

Growth factor: TGF-β, PDGF, FGF-2, IGF-1, EGF, NGF,HGF

Methodology for obtaining PRP

- There are multiple methods to obtain the PRP.
- Plasma fractions can vary as a result of the method used.



Studies on the use of PRP as a treatment in OA

Year and Author	Nº of animals and groups	Obtaining PRP and treatment	Injury	Conclusions
2013 Silva	Total: **10** dogs. Group control: **4** dogs Treated with PRP: **6** dogs	Type: PRP with only one centrifugation. Treatment: 3 injections each two weeks	Anterior cruciate ligament rupture.	After 90 days post-surgery, the patients treated with PRP shown **no pain symptoms**. The non-treated patients still showed pain. None of the groups presented evolution of the OA.
2014 Cuervo	Total: **39** dogs. Treated with stem cells: **19** dogs Treated with PRP: **20** dogs	Type: PRGF with only one centrifugation. Treatment: Only one injection	OA on hip.	Patients treated with PRGF **present clinical improvements during the next six months.**
2014 Kazemi	Total: **12** dogs. Group control: **6** dogs Treated with PRF: **6** dogs	Type: Platelet rich fibrin (PRF) Treatment: Only one application	Perforation of the femoral condyles.	After 24 weeks, **macroscopic and microscopic improvements were observed.**
2016 Cook	Total: **12** dogs. Group control: **6** dogs Treated with PRP: **6** dogs	Type: PRGF with only one centrifugation. Treatment: Injection on weeks: 1, 2, 3, 6 and 8.	Cross section of the anterior cruciate ligament.	The patients treated with PRGF presented improvements: **regeneration of the cartilage, less severe synovitis, decreased pain, improved movement and joint function.**

Conclusions

Pros:

Intra-articular injections of PRP **can be an alternative treatment** for dogs with osteoarthrosis due to:

- Stimulates cartilage reparation in a physiological way.
- Favors the synthesis of components of the MEC.
- Modulates inflammatory cytokines.
- Improves viscoelastic and lubricating properties if the synovial liquid.
- Reduces the degree of pain.
- Improves the joint's functionality.
- Provides better quality of life to the patient.

Cons:

- There is **no standardized** definition about the concentration of platelets and growth factors that the PRP shall contain.
- There is still no knowledge about whether or not leukocytes and erythrocytes should be incorporated in the PRP.
- Even though there are **multiple methods** defined to obtain PRP, there is no consensus on which is the best technique.
- **Therapeutic** guidelines **are unknown**.
- Current studies are done with a **low number of patients**.
- There are **no long-term** studies for the PRP therapy.