Pooled platelet lysate (PL) as fetal bovine serum (FBS) substitute for canine mesenchymal stem cell (MSC) culture

Universitat Autònoma de Barcelona

Final Degree Project

Marta Montolío Torrell

BACKGROUND

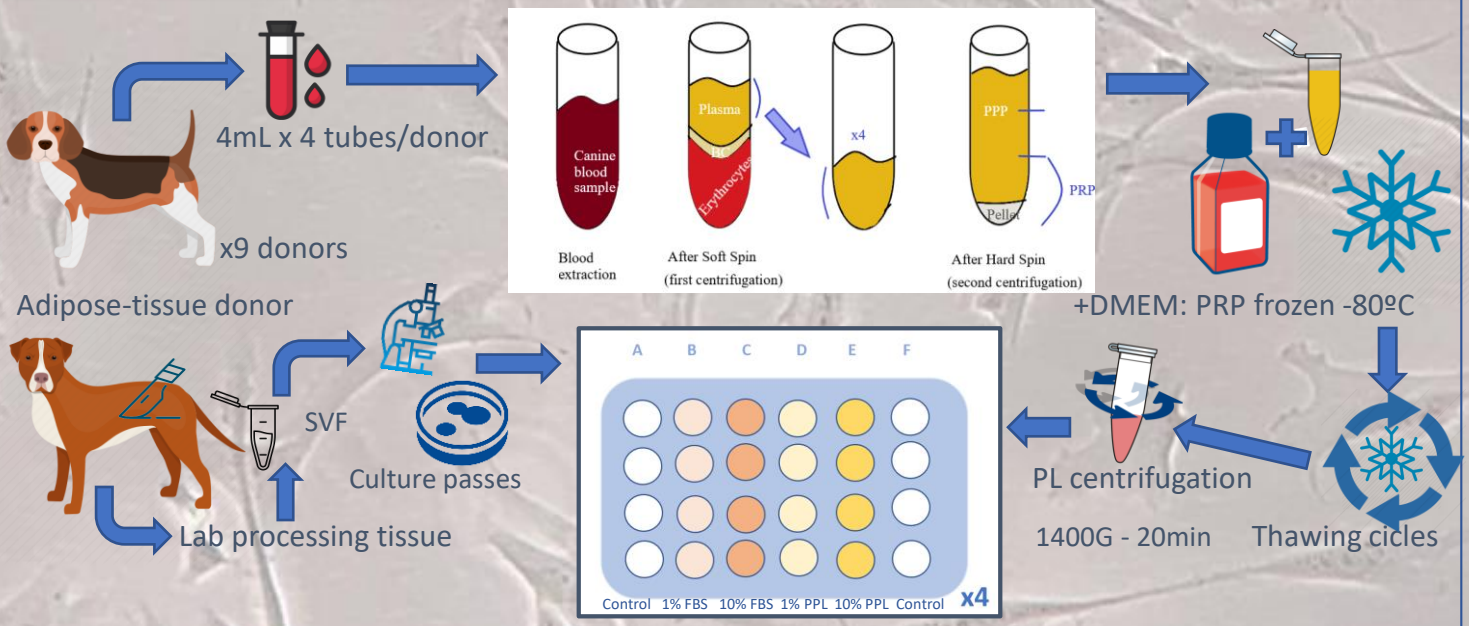
Tissue regeneration:

- Cytostatic signaling → Growth Factors (GFs) → Platelet-Rich Plasma (PRP) – PL
- Pluripotential cell population → MSCs:
  - Plastic adherence
  - Non-hematopietic cells
  - Differentiation *in vitro*: chondroblasts, osteoblasts, adipocytes

OBJECTIVES

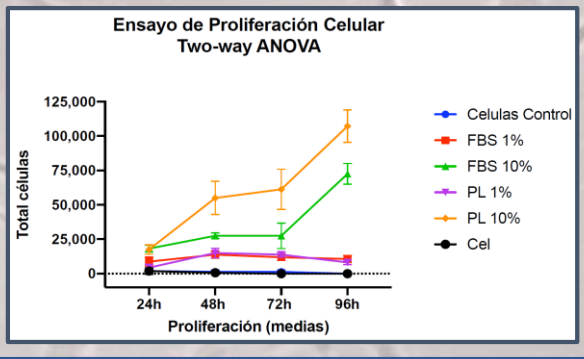
- Obtention of canine platelet rich plasma (cPRP) and canine platelet Lysate (cPL) by an in-house double-spin method.
- Stimate clinical effects of preparations.
- Define the use and efficacy of PPL in cellular proliferation of cMSCs cultures, compared with cultures supplemented with FBS.

MATHERIALS AND METHODS



RESULTS

- Platelets media on basal hemograms: 259,57*10³ (+/- 36,54) platelets/µL.
- PRP concentration after first spin: 228*10³ (+/- 22) platelets/µL.
- Mycoplasma PCR test resulted negative.
- Cytometry, CD90 and CD44 resulted positive whereas CD34 and CD45 resulted negative.
- Morphology: Control groups (A, F) most of the cells are non-attached. On 1% groups (B, D) there are more attached cells. On 10% groups (C, E), there are less non-attached cells.



CONCLUSIONS

- Canine AD-MSCs can be easily collected, isolated and cultivated with minimal invasive surgery.
- cPPL can be prepared by a manual double-spin method and has been proved to be safe for the allogenic cMSCs.
- cPPL has been proved to effective and it could be a feasible substitute to FBS → results show more cell proliferation on cultures supplemented with PL at 10%.