

Therapeutic properties of pequi lipophilic fraction (*Caryocar brasiliense*) in skin wound repair: modulation of inflammatory and proliferative phases.

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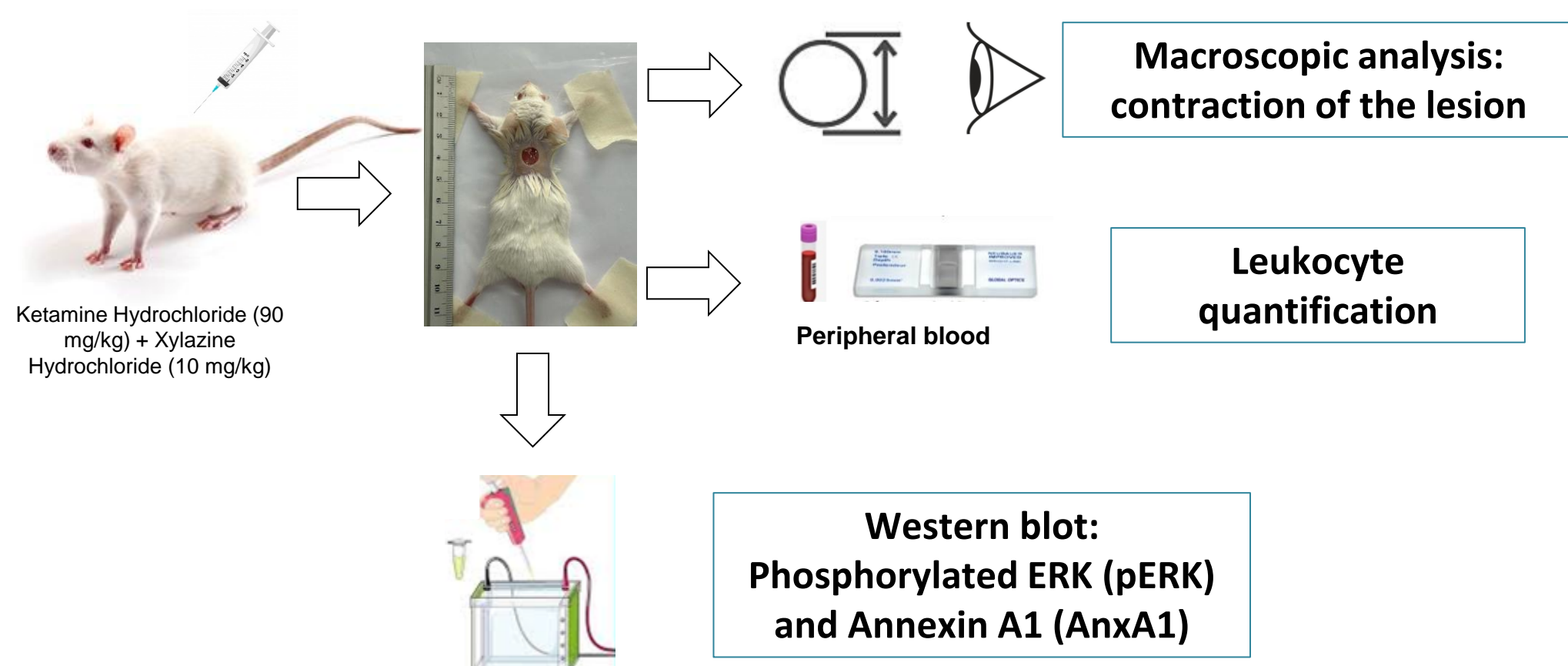
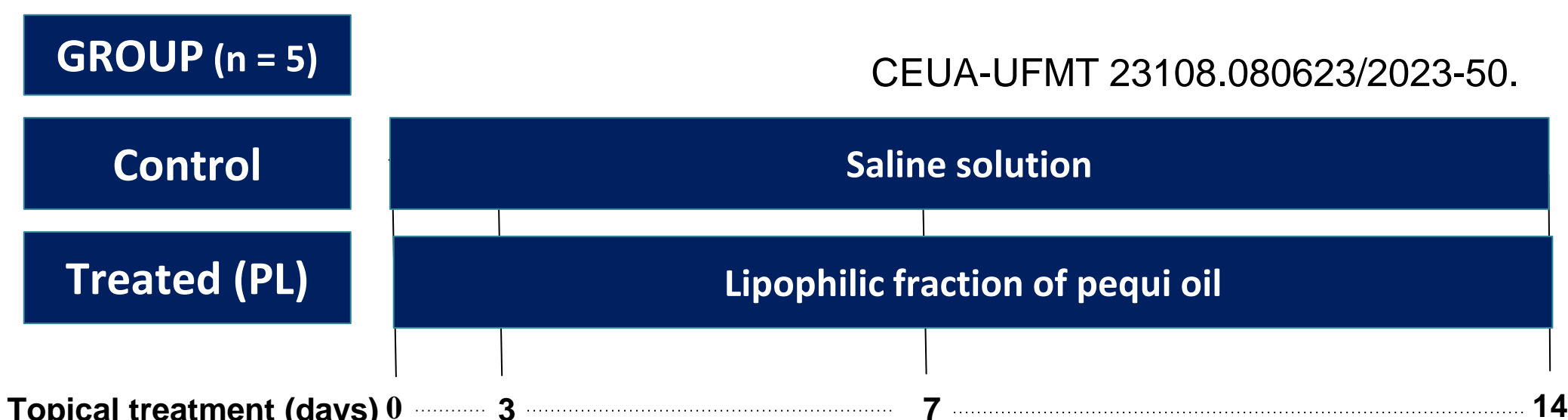
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INTRODUCTION & AIM

Tissue repair, which depends on the action of several cell types and sequential and synchronized events, is divided into three phases: inflammatory, proliferative and tissue remodeling. In this scenario, the use of natural substances that can act to facilitate or accelerate this process is sought¹. Therefore, pequi (*Caryocar brasiliense*), a fruit from the Brazilian Cerrado recognized for its important therapeutic properties, was used in this study to investigate its action on skin wounds repair, which were treated with the lipophilic fraction of the oil from this fruit.

METHOD



RESULTS & DISCUSSION

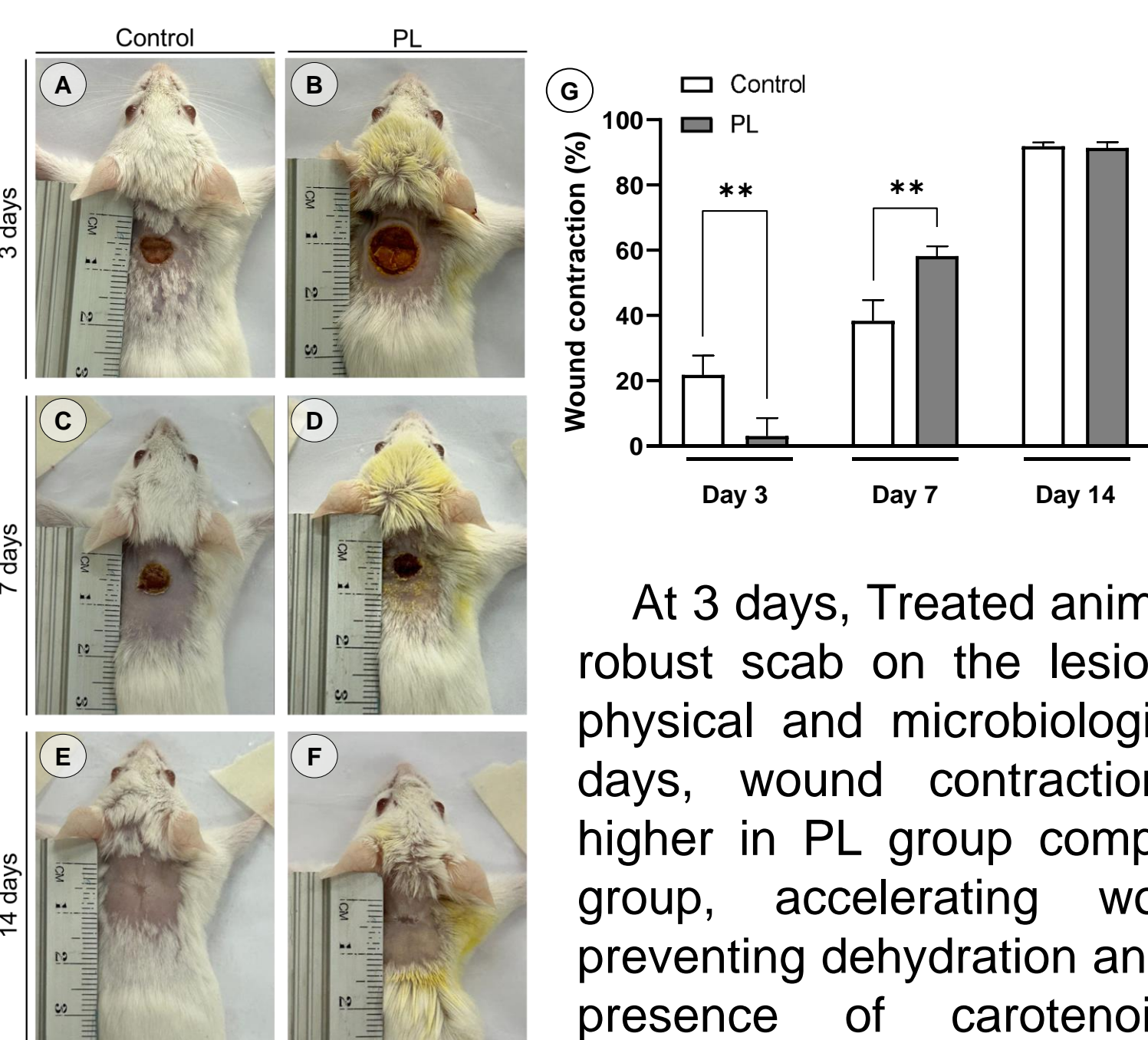


Figure 1. Macroscopic analysis of wound in animals from Control and PL groups on days 3, 7 and 14 [A-F]. Quantification of wound contraction [G]. Results shown as mean \pm S.E.M of the percentage of wound contraction.

At 3 days, Treated animals exhibited a more robust scab on the lesion, providing greater physical and microbiological protection. At 7 days, wound contraction was significantly higher in PL group compared to the Control group, accelerating wound closure and preventing dehydration and infection risks. The presence of carotenoids and phenolic compounds is associated with antioxidant effects, antimicrobial activity and combating free radicals ². Research indicates that pequi oil contributes to the healing process of skin wounds in rats, accelerating tissue repair ^{3,4,5}.

RESULTS & DISCUSSION

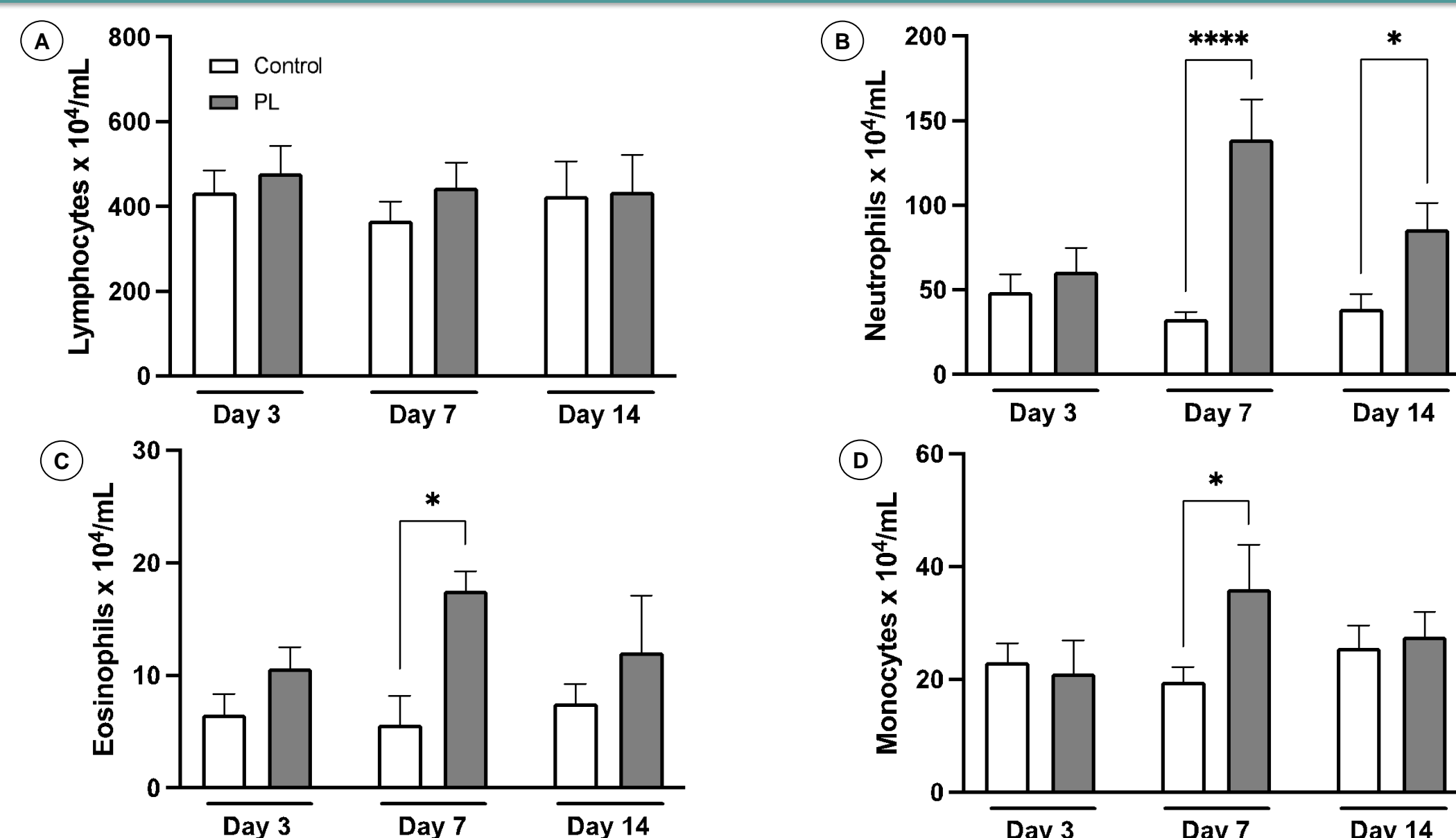


Figure 2: Quantitative analysis of circulating leukocytes in the peripheral blood of Control and PL animals at 3, 7 and 14 days. Neutrophils [A]; Eosinophils [B]; Monocytes [C] and Lymphocytes [D]. Data show mean \pm S.E.M. of leukocytes $\times 10^4$ (n = 5 animals/group). * p ≤ 0.05 ; **** p ≤ 0.0001 .

In peripheral blood, a higher number of neutrophils, eosinophils, and monocytes were identified in the PL group compared to the Control group, particularly during the early 7-day period. These results suggest the compounds present in the lipophilic fraction of pequi oil may inhibit leukocyte transmigration, thus exerting a local anti-inflammatory effect. This effect would explain the greater quantity of leukocytes in the bloodstream of animals in the PL group, corroborating other findings of our research group that used crude pequi oil in skin lesions.

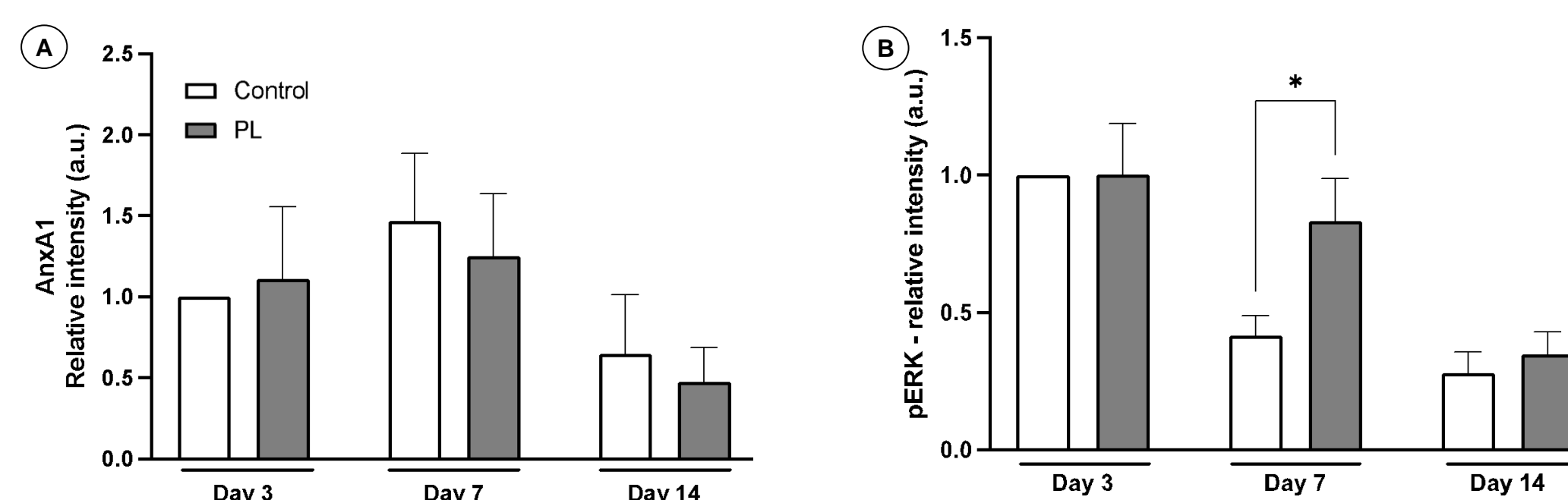


Figure 3: Measurement of AnxA1 [A] and pERK [B] levels in tissue macerate at 3, 7 and 14 days. Data show mean \pm S.E.M. of relative intensity (n = 5 animals/group). * p ≤ 0.05 .

No difference was observed in AnxA1 protein expression between the experimental groups. However, the PL group showed higher pERK expression at 7 days compared to the Control group. ERKs are activated in response to growth factor signals and are essential for cell maintenance and differentiation ⁶.

CONCLUSION

All these data suggest that pequi oil acts as an effective modulator of the inflammatory phase, by inhibiting leukocyte transmigration, and of the proliferative phase, through the activation of the ERK pathway, preparing the tissue for regeneration without altering AnxA1 levels. Thus, it is evident that the lipophilic fraction of pequi accelerates tissue repair by modulating the inflammatory and proliferative phases, promoting more efficient healing.

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