

INVESTIGACIÓN - BIOMEDICINA

**EFFECTS OF PHOTOBIMODULATION ON HUMAN PLATELETS:
CHARACTERIZATION OF THE ABSORPTION SPECTRUM AND ANALYSIS
OF CELL VIABILITY**

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Introduction: Human platelets play an essential role in hemostasis, immune response, and tissue repair processes. However, during storage, they undergo biochemical and functional changes that may compromise their therapeutic

quality in transfusion medicine. Strategies aimed at preserving platelet viability and functionality are highly relevant. Photobiomodulation (PBM)—the application of low-intensity light to modulate biological processes—is considered a promising approach to maintaining cell functionality during storage.

Objective: To characterize the absorption spectrum of human platelets and evaluate the effects of PBM on cell viability.

Methodology: Platelet concentrates obtained by apheresis from healthy donors will be provided by the Fundação Pró-Sangue (São Paulo Blood Center Foundation), School of Medicine, University of São Paulo, Brazil. The dosimetric parameters for each irradiated group will be defined based on the initial spectrophotometric analysis. Each experimental group will be subjected to the following evaluations: absorption spectrophotometry; cell viability (trypan blue exclusion method); platelet morphology (optical microscopy); nitric oxide dosage (Griess method) and total protein quantification (Bradford method); and apoptosis analysis (Annexin staining by flow cytometry). This project will be approved by the Research Ethics Committee of Universidade Nove de Julho (opinion No. 7,619,499).

Palavras-chave: photobiomodulation; platelets; cell viability.