

## **A transmission electron microscopy study of anticoagulant-induced platelet vesiculation**

### **ABSTRACT**

Platelet microparticles (PMPs) are small membrane fragments released from activated platelets in response to various stimuli. PMPs serve as biomarkers for several diseases and conditions and are useful tools for prognostic, diagnostic, and therapeutic purposes. The objective of our study was to compare the direct effects of ethylenediaminetetraacetic acid (EDTA) and sodium citrate anticoagulants on platelet structure and PMP vesiculation using transmission electron microscopy to visualize the morphologic changes in platelets. Micrographs revealed that platelets in the EDTA-anticoagulated tube manifested with significant morphologic changes and induced PMP vesiculation. On the other hand, the sodium citrate-anticoagulated tube showed a normal platelet structure and minor modifications in some cases, with poor indication of PMP vesiculation. In conclusion, EDTA induced platelet activation and PMP vesiculation and represents a major source of artifacts during the pre-analysis steps of PMP vesiculation.

**Keyword:** EDTA; Platelet microparticles; Pre-analytical artifacts; Sodium citrate; Transmission electron microscopy