New evolution in platelet products: Platelet derived microparticles(PDM) as a substitute for platelets:
Functional roles and potential
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**Background:** Platelet derived microparticles (PMPs) are fragments shed from plasma membranes of platelets that are undergoing activation, stress or apoptosis. They have a phospholipid-based structure and express functional receptors from platelet membranes. Since, the use of platelet products is limited due to the side effects of platelet transfusions, viral and bacterial contamination, short expiration date and many efforts have been made to create alternatives for platelets.

**Aim:** The aim of this study was to survey the size and expression of surface glycoproteins of PDM in platelet concentrate.

**Methods:** 30 units of platelet concentrate (PC) were prepared. PDM were isolated using centrifugation from PC during seven days storage. The size of PDM was determined. Besides, we determined MP adhesion capacity to annexin-V due their PS contents. Additionally, the expression of gpIIb and IIb/IIIa on the PDM and VWF binding properties were also studied.

**Results:** The size distribution of PDM was determined in the range of 146 to 797 nm. The expression of gpIIb/IIIa and gpIb molecules was demonstrated on the surface of PDM. PDM as platelet had adhesion capacity to annexin V due their phosphatidylserine (PS) contents. The data showed that MPs could bind to VWF.

**Conclusion:** This study could imply the expression of the same surface markers of platelets on the PDM. The results can imply the potential capacity of the PDM as a platelet substitute product. It is hoped that the use of the nanotechniques to design the platelet derived nanomicroparticles.

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