Reducing Platelet Contamination in Fresh Human Samples

Platelets (thrombocytes) are small, irregularly shaped clear cell fragments derived from megakaryocytes and are necessary for normal blood clotting. Platelets by nature are very sticky, and when activated, will adhere easily to other sticky cell types (i.e. monocytes, eosinophils, etc.), creating cell clumps.

Samples containing platelets should therefore be collected and handled gently to prevent platelet activation. The following recommendations may help.[1]

- When drawing blood, use a wide bore needle (e.g. 19G), and do not apply vigorous traction if using a syringe plunger
- Use more anti-coagulant when drawing blood (e.g. collect the blood in ACD tubes)
- Do not vortex the blood sample
- Use buffer without Ca^{++} and Mg^{++} to prevent platelet activation

The following procedure may also help reduce platelet contamination in mononuclear cell suspensions prepared from fresh whole blood:

1. When isolating the mononuclear cells during density gradient centrifugation (e.g. Lymphoprep™ or Ficoll™), avoid taking any of the platelet-enriched plasma layer.
2. Next, wash the isolated mononuclear cells:
    1. Perform a slow spin on the isolated cells (120 x g, 10 min, brake off, room temperature)
    2. Carefully remove the platelet-rich supernatant and discard
    3. Resuspend the cell pellet in fresh buffer (using a fresh pipette).
    4. Repeat at least twice for a total of 3 or more washes.

[1] Lim, K. G. and Weller, P. F. 2001. Isolation of Human Eosinophils. Current Protocols in Immunology. 7.31.1-7.31.7.