Green colour donor plasma

Sir,

The green discolouration of plasma frequently results in the plasma units being discarded or removed from the donor pool for commercial use, purely based on its appearance. The suitability of green plasma for transfusion is questioned by many clinicians.

We report two cases of green discolouration of plasma; one from a 31 years woman and another from a 28 years woman. The donors had no medical problems and met all the criteria for blood donation. As the plasma was returned to the blood bank for disposal due to green colour, we decided to review the aetiology and transfusion implications of the plasma. The plasma sample was sent for culture and was reported as sterile. The bilirubin level (total, direct and indirect) was normal. When we contacted the donors telephonically, a history of oral contraceptive pill intake was revealed.

The yellow colour of plasma is due to the presence of the yellow pigments bilirubin, carotenoids, haemoglobin and iron transferrin. Tovey and Lathe reported green plasma in young women on contraceptive pills and were able to confirm elevated ceruloplasmin levels in the green plasma units in their study. Wolf,...
et al.,[3] reported that elevated ceruloplasmin levels are found after oestrogen administration in female donors, who were taking oral contraceptives. The rise in ceruloplasmin in women on oral contraceptives is probably due to the oestrogen components, ethinyloestradiol or mestranol. Both of these produce a similar effect.

The other causes of discolouration of plasma units are Gram-negative cryophilic contaminants such as the Pseudomonas species[2] and green pigmentation of plasma in rheumatoid arthritis[4] and use of medications including sulphonamides.[5]

Cotton et al.[6] evaluated the haemostatic potential and capacity of green plasma compared to standard colour plasma. This study revealed that plasma from female donors that has a green colour had a more hypercoagulable thromboelastogram profile for all values (r-value, k-time, angle, mA) when compared to standard plasma. Differences were also observed with coagulation factor levels comparison, with green plasma having higher levels than standard (Factor II, Factor VII, Factor IX, Factor XI). Using automated thrombogram, green plasma had higher lag time and increased endogenous thrombin potential.

As per the Canadian blood services[7] the transfusion of green colour plasma due to oral contraceptives have been found to be safe and acceptable. To assess the transfusion implications of this plasma, the possible causes of green discolouration were investigated, i.e., culture, history of medication including sulphonamides and history of illness including joint pains. The ceruloplasmin levels could not be measured in the plasma at our blood bank due to cost constraints. All except the history of oral contraceptive intake was negative. However, as per the institute policy, these were discarded. We recommend that there should be national guidelines regarding the use of discoloured plasma so as to maintain uniformity in transfusion practices.

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**Conflicts of interest**
There are no conflicts of interest.

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