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ANSWER: GREEN DISCOLOURATION OF PLASMA SECONDARY TO ETHINYL OESTRADIOL CONTRACEPTIVE PILL

The donor was contacted, and further history revealed that she had taken ethinyl oestradiol on the day of the donation. Moreover, she had been taking these pills for the past two months. The donor's blood group was B RhD positive. All transfusion microbiology screening results were negative. Her plasma was sent for culture and sensitivity analysis, and the result was reported negative.

Normally, plasma is yellow in colour due to the presence of carotenoids, haemoglobin, iron transferrin and yellow pigments of bilirubin. Nevertheless, there have been reported cases of green discolouration of plasma among female blood donors who take contraceptive pills. This is due to the elevated ceruloplasmin level in those blood donors. Ceruloplasmin is an acute phase protein that contains mostly copper. An elevated ceruloplasmin level with an increased in copper level is also found in rheumatoid arthritis patients and in women with a high oestrogen level, such as pregnant women and those who take oral contraceptive pills. [1]

Furthermore, contamination of the blood product by *Pseudomonas* may also cause green discolouration of plasma. This is due to the release of pyocyanin, which is a blue redox-active secondary metabolite following *Pseudomonas* infection. [2] Occasionally, incorporation of sulphur atoms into the porphyrin ring of the haem group in the haemoglobin leads to the formation of sulfhaemoglobin which subsequently causes green discoloration of plasma. Sulfhaemoglobin formation is attributed to medications that contain sulphonamides.

Although, green discolouration may hinder the use of plasma by clinicians, previous study had demonstrated that green-coloured plasma had significantly more coagulation factors II, VII, IX, X and XI; better hypercoagulable thrombelastography profile; higher lag time; and more endogenous thrombin potential as compared to normal-coloured plasma. [3] Therefore, plasma tinted green due to oral contraceptive intake is considered safe and acceptable for transfusion.

For this blood donor, the ceruloplasmin level of her plasma could not be measured due to the cost constraint. However, her plasma was discarded following institution policy. It is important to have a uniform policy about the acceptability of blood products with abnormal visual appearance, and the existing regulation prohibits its usage.

REFERENCES

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