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Evaluation of the Interference of Different Bilirubin Concentrations on Determination of Serum Triglyceride Concentration by Glycerol Phosphate Oxidase Method at Different Wavelengths in Pooled Serum

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Introduction

Triglyceride measurement is important for heart health analysis as it is included in lipid profile and contributes to calculating Low-Density Lipoprotein cholesterol. In hyperbilirubinemia, bilirubin may cause chemical and spectral interference in triglyceride estimation by Glycerol Phosphate Oxidase method. Spectral interference of different concentrations of bilirubin at different wavelengths was evaluated by this study.

Methods

Different concentrations of bilirubin (20, 40, 60, 80 and 100mg/dL) were prepared by diluting bilirubin standard (200 mg/dL) in prepared pooled serum (25 mL). Triglyceride values in different concentrations of bilirubin treated pooled serum were measured at four wavelengths (490, 505, 545 and 555 nm) by glycerol phosphate oxidase method and were compared with baseline triglyceride values in two categories where one based on wavelengths and the other based on added bilirubin concentrations.

Results

When comparing the different concentrations of bilirubin treated triglyceride levels with baseline triglyceride level measured at different wavelengths, there were no significant variations observed at 545 nm and 555 nm up to 60 mg/dL and 20 mg/dL added bilirubin concentrations respectively ($P > 0.05$). However, there were significant variations observed in all bilirubin concentrations at 490nm and 505 nm ($P < 0.001$). When comparing bilirubin treated triglyceride concentrations with baseline triglyceride at each wavelength, there were no significant variations observed in 20, 40 and 60 mg/dL bilirubin treated serum at 545 nm.

Conclusion

This study revealed that 545nm wavelength is preferable for triglyceride measurement as it gives negligible bilirubin interference up to 60mg/dL.

Keywords

Triglyceride, Bilirubin, Interference, wavelengths