

ABSTRACTS OF RESEARCH PAPERS

RP 11

Effect of Different Levels of Serum Ascorbic Acid on Triglyceride and Total Cholesterol Estimation by Enzymatic Colorimetric Method

Muhfees ASM¹, Coonghe PAD², Sivakumar H³

¹Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, University of Jaffna, Sri Lanka

²Department of Community and Family Medicine, Faculty of Medicine, University of Jaffna, Sri Lanka

³Department of Pathology, Faculty of Medicine, University of Jaffna, Sri Lanka

Introduction

Measurement of exact levels of serum triglyceride and serum total cholesterol is important as those are used as risk indicators for coronary heart disease. Enzymatic colorimetric method is used in most clinical laboratories to measure serum triglyceride and total cholesterol levels, and is subjected to interference by numerous substances. Ascorbic acid is one of the interfering substances that may cause false results during serum triglyceride and total cholesterol estimation.

Method

Pooled serum was prepared from 18 healthy individuals. Pooled serum concentration of ascorbic acid (titration method), triglyceride (enzymatic colorimetric method) and total cholesterol (enzymatic colorimetric method) were measured. Ascorbic acid solutions of different concentrations (5 to 320 mg/dL) were added to pooled serum. Triglyceride and total cholesterol concentrations of those ascorbic acid added serum were measured. This procedure was repeated with different concentrations of triglyceride (baseline, 150, 100 and 70 mg/dL) and total cholesterol (baseline, 130, 100 and 70 mg/dL).

Results

Mean ascorbic acid, triglyceride and total cholesterol concentrations of pooled serum sample were, 1.1 (\pm 0.01) mg/dL, 166.617 (\pm 1.01) mg/dL and 178.729 (\pm 1.24) mg/dL, respectively. When 5 to 320 mg/dL of ascorbic acid was added to pooled serum, different concentrations of triglyceride and total cholesterol, a statistically significant ($P < 0.001$) negative interference was observed in both triglyceride and total cholesterol concentration.

Conclusions

Ascorbic acid negatively interferes with the enzymatic colorimetric method of serum triglyceride and total cholesterol estimation. The magnitude of negative interference was statistically significant even at 5 mg/dL of ascorbic acid. Thus, when we measure the serum triglyceride and total cholesterol level, the concentration of ascorbic acid could be considered especially for those who take vitamin C supplementation.

Keywords

Ascorbic acid, triglyceride, total cholesterol