

## Original Paper

# The comparison of Friedwald formula and direct measurement to determine the serum levels of LDL-C

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## Abstract

**Background and Objective:** The risk of coronary heart disease (CHD) is proportional to the LDL-C lipoprotein. Due to frequent use of Friedwald formula in estimation of LDL-C in most laboratories, this study was done to compare the Friedwald formula and direct measurement to determine the serum levels of LDL-C

**Materials and Methods:** This descriptive study was conducted on of 598 patients 226 male and 372 female whome referred to Imam Ali hospital Andimeshk cityin Khozestan province of Iran for health check up during 2009. 5 ml of the venous blood was drawn. Total cholesterol (TC) (mg/dl), Triglyceride (TG) (mg/dl), HDL-C (mg/dl) and LDL-C (mg/dl) of serum are measured with Pars azmun company kits. The Friedwald formula was used for estimation of LDL-C. The K=3, 3.5 and 5 were used to stimate the lipid by Friedwald formula. Data were analyzed using SPSS-18, Pearson correlation coefficient and ANOVA tests.

**Results:** A total of 598 serum samples collected; 37.8% were men and 62.2% women. The mean age of participants was 38.8±10.77 years. Minimum age 21 years and maximum age was 77 years. Mean deviation for TG≤150, 201-300 and 301-400 in Friedwald formula (k=5) were -13.01±8.79, -17.11±13.17 and -18.63±18.54, respectively and with k=3 are -.39±12.04, -0.078±18.55 and 0.04±25.55 and for TG between 151-200 is -9.72±10.54 and with k=3.5 is equal to 0.82±13.70. Pearson correlation test showed that direct measurment and calculated from the equation Friedwald, for triglycerides in the area equal to or less than 150, 151-200, 201-300 and 301-400 mg/dl, with correlated to Pearson correlation coefficient were 0.982, 0.991, 0.991 and 0.975, respectively.

**Conclusion:** This study showed that the direct measurement method is superior to the Friedwald equation, otherwise, equation Friedwald formula with K=3 is recommended.

**Keywords:** LDL-C, Direct measurement, Friedwald formula

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Received 24 Aug 2011

Revised 21 Nov 2011

Accepted 19 Dec 2011