**Comparative characteristics of the calculation formulas for low density lipoprotein cholesterol**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **First author, reference** | **Year** | **Formula** | **Country, measurement units** | **Sample size, N** | **Years of the study** | **LDL-C, reference technique** |
| Friedewald W.T. [10] | 1972 | TC - HDL-C - TG / 5 | USA, mg/dL | 448 | – | β-quantification |
| DeLong D.M. [13] | 1986 | TC - HDL-C - 0.16 × TG | USA, mg/dL | 10000 | 1972–1975 | Ultracentrifugation |
| Rao A. [14] | 1988 | (4.7 × TC - 4.364 × HDL-C - TG) / 4.487 | Kuwait, mg/dL | 196 | – | β-quantification |
| Hattori Y. [15] | 1998 | 0.94 × TC - 0.94 × HDL-C - 0.19 × TG | Japan, mg/dL | 2161 | 1992–1996 | Ultracentrifugation |
| Anandaraja S. [16] | 2005 | (0.9 × TC) - (0.9 × TG / 5) - 28 | India, mg/dL | 2008 | 1998 | Direct measurement (Beckman) |
| Teerakanchana T. [17] | 2007 | (0.91 × TC) - (0.634 × HDL-C) - (0111 × TG) - 6.755 | Thailand, mg/dL | 1016 | 2004–2005 | Direct measurement (Hitachi) |
| Ahmadi S.A. [18] | 2008 | TC / 1.19 + TG / 1.9 - HDL-C / 1.1 - 38 | Iran, mg/dL | 230 | 2002–2003 | Direct measurement (Technicon) |
| Puavilai W. [19] | 2009 | TC - HDL-C - (TG / 6) | Thailand, mg/dL | 999 | – | Direct measurement (Hitachi) |
| Chen Y. [20] | 2010 | (TC - HDL-C) × 0.9 - TG × 0.1 | China, mg/dL | 2180 | – | Direct measurement (Hitachi) |
| Vujovic A. [21] | 2010 | TC - (TG / 6.85) - HDL-C | Servia, mg/dL | 2053 | 2007–2008 | Direct measurement (Kyowa Medex) |
| Chowdhury N. [22] | 2013 | TC - TG / 5 - HDL-C + 15.3 × (TG / TC) - 2.4 | Bangladesh, mg/dL | 1052 | 2011 | Direct measurement (Olympus AU400) |
| de Cordova C.M. [23] | 2013 | 0.75 × (TC - HDL-C) | Brasil, mg/dL | 10664 | 2000–2002 | Direct measurement (Wako) |
| Martin S.S. [24] | 2013 | TC - HDL-C - (TG / adjusted multiplier) | USA, mg/dL | 1350908 | 2009–2011 | Vertical analytical centrifugation |
| Dansethakul P. [25] | 2015 | 0.9955 × TC - 0.9853 × HDL-C - 0.1998 × TG + 7.1449 | Thailand, mg/dL | 1786 | 2008 | Direct measurement (Roche) |
| Hu C.Y. [26] | 2015 | TC × 0.75 - 0.6465 | China, mg/dL | 21689 | 2010–2014 | Direct measurement (Wako) |
| Rasouli M. [27] | 2017 | TC × 0.75 - 0.5 × HDL-C - 0.1 × TG | Iran, mg/dL | 310 | – | Direct measurement (Pars Azmon Inc) |
| Saldaña Orejon I.M. [28] | 2017 | 0.974 × TC - 0.160 × TG - 0.968 × HDL-C + 5.361 | Peru, mg/dL | 4644 | 2015 | Direct measurement (Siemens) |
| Ghasemi A. [29] | 2018 | TC - HDL-C - TG / 4 | Iran, mg/dL | 5030 | 2012–2015 | Direct measurement (Pars Azmon Inc) |
| Ephraim R.K.D. [30] | 2018 | TC - HDL-C - TG / 4 | Ghana, mmol/L | 1518 | 2016–2017 | Direct measurement (URIT) |
| Molavi F. [31] | 2020 | 0.97 × TC - 0.93 × HDL-C - 0.19 × TG | Iran, mg/dL | 3844 | 2015 | Direct measurement (Hitachi) |
| Sampson M. [32] | 2020 | TC / 0.948 - HDL-C / 0.971 - (TG / 8.56 + TG × non-HDL / 2140 - TG²/16100) - 9.44 | USA, mg/dL | 8656 | 1976–1999 | β-quantification |
| Bauer F. [33] | 2021 | TC - HDL-C - TG / 7.98 | Germany, mg/dL | 3514 | 2014–2019 | Direct measurement (Roche) |
| Choi R. [34] | 2021 | TC - 0.87 × HDL-C - 0.13 × TG | South Korea, mg/dL | 7537 | 2017–2018 | Direct measurement (Roche) |
| Sadovnikov P.S. [35] | 2022 | Non-HDL-C - (TG / 3 - 0.14) | Russia, mmol/L | 750000 | 2016–2020 | Direct measurement (Roche) |
| Jeong Y.W. [36] | 2023 | 0.94 × TC - 0.94 × HDL-C - 0.12 × TG | South Korea, mg/dL | 18837 | 2009–2019 | Direct measurement (Hitachi) |

HDL-C, high density lipoprotein cholesterol; LDL-C, low density lipoprotein cholesterol; non-HDL-C, non-high density lipoprotein cholesterol; TC, total cholesterol; TG, triglycerides