ABSTRACT

India has the second-highest type 2 diabetes mellitus (T2DM) due to the South Asian phenotype, poor lipid profile, and unbalanced dietary pattern. Evidence has been discovered that single nucleotide polymorphisms (SNPs) in the lipoprotein lipase (LPL) and cholesteryl ester transfer protein (CETP) genes are linked to differences in lipid levels in response to dietary intake. Hence, this review aimed to explore and present nutrigenetic studies of LPL and CETP SNPs and dietary interactions on lipid traits among Asian Indians. Relevant articles were retrieved through PubMed and Google Scholar up until March 2022. The LPL & CETP SNPs as exposure, dietary and lipid phenotype as outcome variables, and conducted in the Asian Indian population were the inclusion criteria. Forty-seven articles for eligible criteria were screened into 12 full-text qualified studies: nine associations and three interaction studies. CETP *TaqIB* and rs1800775, LPL rs320 and S447X were consistently associated with HDL and TG levels. Overall, LPL & CETP SNPs x dietary interaction studies on Asian Indians have not been thoroughly conducted. To date, only three studies investigated different quantities of dietary fat on four SNPs: LPL rs1121923 and rs4922115 on HDL-C and TG levels, respectively; CETP rs3764261 on LDL-C and total cholesterol; and CETP *TaqIB* on HDL-C. It is suggested for each individual to obtain healthy dietary fats that take into account various types of fat and total energy intake. The ideal prediction model for each person's nutritional needs must therefore be designed utilizing machine learning and an integrated artificial intelligence approach.

Keywords: lipoprotein lipase, cholesteryl ester transfer protein, dietary fat, lipids, nutrigenetics, Asian Indians