SYSTEMATIC REVIEW AND META-ANALYSIS OF THE ASSOCIATION BETWEEN VITAMIN D LEVELS AND THE SINGLE NUCLEOTIDE POLYMORPHISMS, *rs7041*, *rs4588*, AND *rs2282679* OF THE GROUP-SPECIFIC COMPONENT GENE (GC)

IBRAHIM AFZAL 5638094 RAME/M

M.Sc. (MEDICAL EPIDEMIOLOGY)

THESIS ADVISORY COMMITTEE: THUNYARAT ANOTHAISINTAWEE M.D.,Ph.D., CHUSAK OKASCHAREON M.D.,Ph.D., AMMARIN THAKKINSTIAN Ph.D.

ABSTRACT

Background: Previous literature suggested that certain single nucleotide polymorphisms (SNP) of group-specific component gene (GC) (i.e. rs7041, rs4588, and rs2282679) were associated with serum vitamin D level.

Objectives: To assess effects of GC gene including rs7041, rs4588, and rs2282679 on serum vitamin D level.

Methods: Studies were located from Medline via PubMed and Scopus databases from initiation to 17th January 2015. All observational studies, published in English were selected if they studied the effect of interested SNPs on serum vitamin D level. Mean differences (MD) of serum vitamin D level between genotypes of each SNP were estimated using multivariate meta-analysis.

Results: A total of 44 studies met inclusion criteria, 25, 20, and 27 studies had data for rs4588, rs7041, and rs2282679, respectively. For rs4588; genotype effect of overall pooled MDs of 25 hydroxy vitamin D (25(OH)D) levels, MD1 (AA versus CC) and MD2 (AC versus CC) for Caucasian adults were, -4.119 (-5.408, -2.831) and -1.871 (95%CI; -2.644, -1.097), and homogenous with the I2 of 25% and 0%, respectively. For rs7041, pooled MD of 25(OH)D level between genotypes TT versus GG (MD1) and TG versus GG (MD2) were, -2.707 (95%CI: -4.91, -0.504) and -1.407 (95%CI: -2.203, -0.612) in Caucasians, with I2 71.4% and 0%, respectively. For rs2282679, pooled MD of 25(OH)D level between genotypes TT versus GG (MD1) and TG versus GG (MD2) for Caucasians were, -3.598 (95%CI: -5.086, -2.111) and -1.841 (95%CI: -2.743, -0.94), with I2 of 76% and 80.4%, respectively.

Conclusions: The SNPs rs4588 and rs2282679 showed negative association with level of serum 25(OH)D.

KEY WORDS: VITAMIN D/rs7041/ rs4588/rs2282679/GC

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