Association between *IL2*/*IL21* and *SH2B3* polymorphisms and risk of celiac disease: a meta-analysis

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ABSTRACT. Celiac disease (CD) is a common autoimmune disorder characterized by heightened immunological response to ingested gluten. Certain gene polymorphisms of *IL2*/*IL21* (rs6822844 and rs6840978) and *SH2B3* (rs3184504) may influence susceptibility to CD, although the effects remain unclear. We performed a meta-analysis of the associations between rs6822844, rs6840978, and rs3184504 polymorphisms and CD risk. PubMed, EMBASE, and the China National Knowledge Infrastructure were searched. ORs and 95%CIs of each single nucleotide polymorphism (SNP) were estimated using the fixed-effect model if I^2 < 50% in the test of heterogeneity; otherwise, the random-effect model was used. Our meta-analysis included 12,986 CD cases and 28,733 controls from 16 independent samples, and the analysis of each SNP contained a subset of the total. We found that the minor allele T of both rs6822844 (T *vs* G, OR

= 0.72, 95%CI = 0.67-0.78, P < 0.001) and rs6840978 (T *vs* C, OR = 0.76, 95%CI = 0.71-0.83, P < 0.001) in *IL2*/*IL21* significantly decreased the risk of CD. However, the minor allele A of rs3184504 (A *vs* G, OR = 1.18, 95%CI = 1.12-1.24, P < 0.001) in *SH2B3* significantly increased CD susceptibility. The estimated lambda values were 0.49, 0.50, and 0.53 for rs6822844, rs6840978, and rs3184504, respectively, suggesting that a co-dominant model of genotype effect was most appropriate for the three SNPs. Our results support associations between the three SNPs and CD and provide a strong argument for further research.

Key words: *IL2*/*IL21*; *SH2B3*; Single nucleotide polymorphisms; Celiac disease; Meta-analysis

