

ADRB2 POLYMORPHISMS AND ASTHMA SUSCEPTIBILITY

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Beta-2-Adrenergic receptors (ADRB2) participate in the physiologic responses of the lung, including bronchodilation and bronchoprotection, through mechanisms such as mucociliary clearance, fluid accumulation and mediator release from mast cells and basophils. Thus, these receptors may also play an important role in the pathophysiology of asthma. The gene encoding ADRB2 is extremely polymorphic, and studies of this gene improves our understanding of asthma and possibly lead to new methods to prevent, diagnose and treat it.

ADRB2 associations between ADRB2 polymorphisms and intermediate phenotypes of asthma have been reported. Four polymorphisms (Arg16Gly, Gln27Glu, Val34Met, and Thr164Ile) and one polymorphism in the 5' leader cistron of the ADRB2 messenger RNA has been identified. In vitro studies have shown that these polymorphisms can affect ADRB2 function.

METHODS: To examine possible associations of ADRB2 polymorphisms with asthma susceptibility, we performed transmission disequilibrium tests (TDT) of 137 Ukrainian families identified through children with atopic asthma.

RESULTS: We did not find associations between any alleles of the ADRB2 polymorphisms and asthma by TDT ($p > 0.1$). We also performed a meta-analysis of data from all available studies. The random-effects model showed no significant odds ratio for the Arg16Gln (odds ratio = 1.05, $p = 0.53$) or Gln27Glu (odds ratio = 1.12, $p = 0.22$) polymorphism.

CONCLUSION: Our data indicate that ADRB2 does not contribute substantially to susceptibility to asthma, but it is possible that these polymorphisms influence disease activity and drug responses in individuals with asthma.

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