THE THERAPEUTIC ROLE OF RESVERATROL IN ALLERGIC LUNG INFLAMMATION

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Abstract
CD4+ T helper type 2 (Th2) cells are crucial for mediating allergic inflammatory lung disease such as asthma, by producing key cytokines including interleukin (IL)-4, IL-5 and IL-13. The phytoalexin, resveratrol, which is rich in grapes and red wine, can increase lifespan and has been suggested as a potential reagent to treat aging-related diseases. Herein we report that resveratrol prevents mice from developing experimental asthma induced by ovalbumin sensitization and re-challenge. Feeding mice with resveratrol inhibits the chronic allergic inflammation in lungs and reduces the numbers of eosinophil/neutrophils in bronchoalveolar lavage fluid. The mechanism appears to be resveratrol-induced suppression of allergic lung inflammation by inhibition of Th2-cytokine production via GATA-3. OVA-specific IL-5 and IL-13 production by CD4+ T cells in treated mice is reduced, and HuR expression in treated mice is reduced. Indeed, resveratrol blocks the in vitro polarization of naïve CD4+ T cells to the Th2 phenotype. Western blotting analysis further shows that resveratrol specifically down-regulates the expression of the Th2 transcription factor, GATA-3 which has been shown to be a HuR target. These results suggest that resveratrol has therapeutic potential for altering the course of allergic inflammatory lung diseases such as asthma.