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Silica Induces Nuclear Factor-kB Activation through TAK1 and NIK in Rat2 cell line

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Silica has been known to be a factor in acute cell injury and chronic pulmonary fibrosis. In Rat2 fibroblasts, silica induced the activation of NFkB, which plays a crucial role in regulating the expression of many genes involved in the subsequent inflammatory response. In addition, we observed that TAK1 and NIK were involved in silica-mediated NF-kB activation in Rat2 cells. The dominant negative mutant forms of TAK1 and NIK inhibited the silica-induced NF-kB activation in Rat2 cells. Furthermore, we demonstrated that endogenous TAK1 is phosphorylated in silica-stimulated Rat2 cells. These results indicate that TAK1 functions as a critical mediator in the silica-induced signaling pathway.

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