# Prostacyclin protects renal tubular cells from gentamicin-induced apoptosis via a PPARalpha-dependent pathway

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摘要

## Abstract

To study the protective effect of prostacyclin (PGI2) we increased PGI2 production by infected NRK-52E cells with an adenovirus carrying cyclooxygenase-1 and prostacyclin synthase. PGI2 overexpression protected these cells from gentamicin-induced apoptosis by reducing cleaved caspase-3 and caspase-9, cytochrome c, and decreasing generation of reactive oxygen species. Expression of the nuclear receptor of PGI2, peroxisome proliferator-activated receptor-alpha (PPARalpha), was reduced during gentamicin treatment of the cells, while its overexpression significantly inhibited gentamicin-induced apoptosis and the amount of cleaved caspase-3. Transformation with PPARalpha short interfering RNA abolished the protective effect of PGI2 overproduction in gentamicin-treated cells. The PPARalpha activator docosahexaenoic acid given to gentamicin-treated mice significantly reduced the number of apoptotic cells in renal cortex, but this protective effect was not seen in PPARalpha knockout mice. Our study suggests that increased endogenous PGI2 production protects renal tubular cells from gentamicin-induced apoptosis through a PPARalpha-signaling pathway.