

## The Effect of Syringic Acid (SP-5) Inhibits LPS-Induced Vascular Injury in Human Pulmonary Artery Endothelial Cells

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**SUMMARY.** The aim of this work was to explore the mechanism by which syringic acid (SP-5) improves vascular injury in human pulmonary artery endothelial cells (HPAEC). A model of HPAEC injury was established by treatment with LPS. ELISA method was used to detect the levels of TNF- $\alpha$ , IL-1 $\beta$ , IL-6, ET-1, VCAM-1, ICAM-1, E-selectin, MCP-1, nitric reductase enzymatic method was used to detect the contents of NO, iNOS. Western blot was used to detect the expressions of AMPK, p-AMPK, I $\kappa$ B $\alpha$ , cytoplasm/nucleus NF- $\kappa$ Bp65. The effect of compound C on SP-5 was also detected. Comparing with model group, SP-5 can improve vascular injury ( $P < 0.05$ ), the levels of IL-6, IL-1 $\beta$ , TNF- $\alpha$ , ET-1, VCAM-1, ICAM-1, E-selectin, MCP-1, iNOS were decreased ( $P < 0.05$  or  $P < 0.01$ ), the content of NO, nuc-p65 was increased ( $P < 0.01$ ), the expressions of p-AMPK, I $\kappa$ B $\alpha$ , cyto-p65 were increased ( $P < 0.05$  or  $P < 0.01$ ). After treatment with compound C, the improvement of SP-5 was not observed. The improvement mechanism of SP-5 may involve the AMPK/NF- $\kappa$ B signaling pathway.

**RESUMEN.** El objetivo de este trabajo fue explorar el mecanismo por el cual el ácido síringico (SP-5) mejora la lesión vascular en células endoteliales de arteria pulmonar humana (HPAEC). Se estableció un modelo de lesión por HPAEC mediante tratamiento con LPS. Se usó el método ELISA para detectar los niveles de TNF- $\alpha$ , IL-1 $\beta$ , IL-6, ET-1, VCAM-1, ICAM-1, E-selectina, MCP-1, y el método enzimático de la reductasa nítrica para detectar la contenido de NO e iNOS. Western blot se utilizó para detectar las expresiones de AMPK, p-AMPK, I $\kappa$ B $\alpha$  y NF- $\kappa$ Bp65 citoplasma/núcleo. El efecto del compuesto C en SP-5 también se detectó. Comparando con el grupo modelo, SP-5 puede mejorar la lesión vascular ( $P < 0.05$ ), los niveles de IL-6, IL-1 $\beta$ , TNF- $\alpha$ , ET-1, VCAM-1, ICAM-1, E-selectina, MCP-1 e iNOS disminuyeron ( $P < 0.05$  o  $P < 0.01$ ), el contenido de NO y nuc-p65 se incrementó ( $P < 0.01$ ) y las expresiones de p-AMPK, I $\kappa$ B $\alpha$  y cito-p65 se incrementaron ( $P < 0.05$  o  $P < 0.01$ ). Después del tratamiento con el compuesto C, no se observó la mejora de SP-5. El mecanismo de mejora de SP-5 puede implicar la vía de señalización AMPK/NF- $\kappa$ B.

**KEY WORDS:** AMPK/NF- $\kappa$ B signaling pathway, HPAEC, LPS, SP-5.

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