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Inhibitory Effect of Wogonin Combined with Gemcitabine on Implanted Human Pancreatic Cancer in Nude Mice and the Mechanism

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***SUMMARY*. The aim of this study is to investigate the inhibitory effect of wogonin combined with gemcitabine on implanted human pancreatic cancer in nude mice and the mechanism. The implanted nude mouse model of SW1990 cells was established. Forty modeled nude mice randomly divided into control, wogonin, gemcitabine, and wogonin+gemcitabine groups, 10 nude mice in each group, which received the treatment using normal saline, wogonin (mg/kg.day), gemcitabine (150 mg/kg.week), wogonin (mg/kg.day) combined with gemcitabine (150 mg/kg.week) for three weeks, respectively. After treatment, compared with gemcitabine group, in wogonin+gemcitabine group the tumor volume and tumor weight were significantly decreased ($P < 0.05$), the tumor inhibition rate was significantly increased ($P < 0.05$), the serum tumor necrosis factor-α, interleukin 6 and interleukin 1β levels were significantly decreased ($P < 0.05$), the apoptosis rate of tumor cells was significantly increased ($P < 0.05$), the tumor tissue B-cell lymphoma-2 protein expression level was significantly decreased ($P < 0.05$), and the tumor tissue Bcl-2 associated X and p53 protein expression levels were significantly increased ($P < 0.05$). In conclusion, compared with single use of gemcitabine, the combined use of wogonin and gemcitabine can enhance the inhibitory effect on implanted SW1990 human pancreatic cancer in nude mice. The mechanism may be related to the synergistic effect in reducing the release of inflammatory factors and promoting the apoptosis of tumor cells.**

RESUMEN. El objetivo de este estudio es investigar el efecto inhibitorio de la wogonina combinada con gemcitabina en el cáncer pancreático humano implantado en ratones desnudos y el mecanismo. Se estableció el modelo de ratón desnudo implantado de células SW1990. Cuarenta ratones desnudos modelados aleatoriamente divididos en grupos de control, wogonina, gemcitabina y wogonina + gemcitabina, 10 ratones desnudos en cada grupo, que recibieron el tratamiento con solución salina normal, wogonina (mg/kg.día), gemcitabina (150 mg/ g.semana), wogonina (mg/kg.día) combinada con gemcitabina (150 mg/kg.semana) durante tres semanas, respectivamente. Después del tratamiento, en comparación con el grupo de gemcitabina, en el grupo de wogonina + gemcitabina, el volumen y el peso del tumor disminuyeron significativamente ($P < 0.05$), la tasa de inhibición del tumor aumentó significativamente ($P < 0.05$), el factor de necrosis tumoral sérica-α, los niveles de interleucina 6 e interleucina 1β disminuyeron significativamente ($P < 0.05$), la tasa de apoptosis de las células tumorales aumentó significativamente ($P < 0.05$), el nivel de expresión de la proteína del linfoma-2 de células B de tejido tumoral disminuyó significativamente ($P < 0.05$) y los niveles de expresión de la proteína X y p53 asociados con el tejido tumoral Bcl-2 aumentaron significativamente ($P < 0,05$). En conclusión, en comparación con el uso único de gemcitabina, el uso combinado de wogonina y gemcitabina puede mejorar el efecto inhibitorio sobre el cáncer pancreático humano SW1990 implantado en ratones desnudos. El mecanismo puede estar relacionado con el efecto sinérgico para reducir la liberación de factores inflamatorios y promover la apoptosis de las células tumorales.

KEY WORDS: apoptosis, gemcitabine, inflammatory response, nude mice, pancreatic cancer, wogonin.

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