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The *In Vitro* Immunomodulatory and Anti-Tumor Activity of Thymosin α1-Thymopentin Fusion Peptide

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***SUMMARY*. In this study, the *in vitro* immunomodulatory and anti-tumor activity of thymosin α1-thymopentin (Tα1-TP5) fusion peptide was evaluated. Flow cytometry was used to detect CD69 expression in lymphocytes and thymocyte apoptosis induced by dexamethasone (Dex). Reverse transcription-PCR (RT-PCR) was used to detect the effect of Tα1-TP5 on the mRNA level of interferon γ (IFN-γ) and interleukin-2 (IL-2) in lymphocytes. 3-(4,5-dimethylthiazol-2-yl) -2,5-diphe-nyltetrazolium bromide (MTT) assay was used to detect the cytotoxicity of natural killer (NK) cells and the anti-tumor activity of Tα1-TP5. The results showed that Tα1-TP5 significantly enhanced CD69 expression than thymopentin (TP5) and thymosin α1 (Tα1). Tα1-TP5 exhibited higher activity than TP5 in inducing IFN-γ and IL-2 expression. Tα1-TP5 showed stronger activity than TP5 and Tα1 in increasing NK cells cytotoxicity and alleviating thymocytes apoptosis. Besides, Tα1-TP5 had a better tumor growth inhibitory effect than TP5. Tα1-TP5 can possibly be developed as a new immunomodulatory agent.**

RESUMEN. En este estudio se evaluó la actividad inmunomoduladors y anti-tumor *in vitro* del péptido de fusión timosina α1-timopentina (Tα1-TP5). La citometría de flujo se utilizó para detectar la expresión de CD69 en los linfocitos y la apoptosis de timocitos inducida por dexametasona (Dex). Se usó PCR con transcripción inversa (RT-PCR) para detectar el efecto de Tα1-TP5 en el nivel de mRNA del γ interferón (IFN-γ) y la interleucina-2 (IL-2) en los linfocitos. El ensayo con 3-(4,5-dimetiltiazol-2-il)-2,5-difeniltetrazolio (MTT) se utilizó para detectar la citotoxicidad de las células asesinas naturales (NK) y la actividad anti-tumor de Tα1-TP5. Los resultados mostraron que Tα1-TP5 mejora de forma significativa la expresión de CD69 de la timopentina (TP5) y α1 timosina (Tα1). Tα1-TP5 exhibe mayor actividad que TP5 en la inducción de la expresión de IFN-γ y IL-2. Tα1-TP5 mostró mayor actividad que TP5 y Tα1 en el aumento de la citotoxicidad de células NK y la disminución de la apoptosis de timocitos. Además, Tα1-TP5 tenía un mejor efecto inhibidor del crecimiento tumoral que TP5. Posiblemente Tα1-TP5 pueda ser desarrollado como un nuevo agente inmunomodulador.

KEY WORDS: anti-tumor activity, immunomodulatory effect, thymopentin, thymosin α1, thymosin α1-thymopentin fusion peptide.

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