

Therapeutic Effect and Mechanism of a New Heterocycles Compound on Diabetic Foot Infection via the Inhibition of Bacterial Resistance

Xukai WANG

*Department of Medicine, Wenzhou University,
Wenzhou, Zhejiang, China*

SUMMARY. The new heterocycles compound 2-(2-(4-fluorophenyl)-2-oxo-1-phenylethyl)-4-methyl-3-oxo-N-phenyl pentanamide (1), designed using methyl 4-methyl-3-oxopentanoate (2) as start material, was successfully obtained via multiple synthesis route and finally characterized by IR, ¹H NMR, and single crystal X-ray crystallography. For the treatment of diabetic foot infection, the biological activity of the new compound was evaluated and the related mechanism was explored. Firstly, the inflammatory cytokines released into the infectious tissue was measured with ELISA assay. Then, the relative expression of the bacterial survival gene in *Staphylococcus aureus* and *Streptococcus* was measured with real time RT-PCR.

RESUMEN. El nuevo compuesto heterociclo 2-(2-(4-fluorofenil)-2-oxo-1-feniletil)-4-metil-3-oxo-N-fenil pentanamida (1), diseñado utilizando 4-metil-3-oxopentanoato de metilo (2) como material de partida, se obtuvo con éxito mediante una ruta de síntesis múltiple y finalmente se caracterizó por IR, RMN 1H y cristalografía de rayos X de cristal único. Para el tratamiento de la infección del pie diabético, se evaluó la actividad biológica del nuevo compuesto y se exploró el mecanismo relacionado. En primer lugar, se midieron las citocinas inflamatorias liberadas en el tejido infeccioso mediante un ensayo ELISA. Luego, se midió la expresión relativa del gen de supervivencia bacteriana en *Staphylococcus aureus* y *Streptococcus* con RT-PCR en tiempo real.

KEY WORDS: crystallography, diabetic foot infection, heterocycles.

* Author to whom correspondence should be addressed. *E-mail:* xukai_wang666@126.com