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Antibacterial Activity of 3-Chloro-2-oxo-*N*-phenyl-4-arylazetidine-1-carboxamide Derivatives

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SUMMARY. To synthesize and characterize novel 3-chloro-2-oxo-N-phenyl-4-arylazetidine-1-carboxamide derivatives (3a-3g) and evaluated them for in vitro antibacterial activity. Compounds **3a-3g** were synthesized by reacting various 1-arylidene-3-phenylurea derivatives (Schiff bases, **2a-2g**), with chloroacetyl chloride in the presence of dimethylformamide, triethylamine, and 1,4-dioxane. Schiff bases **2a-2g** were synthesized by the reaction of phenyl urea (**1**) with appropriate aromatic aldehydes. Compound 1 was synthesized by the reaction of aniline with urea in presence of glacial acetic acid and concentrated hydrochloric acid. The synthesized compounds **3a-3g** were established by infrared (IR), proton nuclear magnetic (^{1}HNMR), and mass spectral analysis. Compounds **3g** with 4-dimethyl amino- phenyl group was exhibited good antimicrobial activity against Gram-positive bacteria and compound **3d** with 4-methyl phenyl group was exhibited good antimicrobial activity against Gram-negative bacteria. Ciprofloxacin was used as a standards drug.

RESUMEN. Sintetizar y caracterizar nuevos derivados de 3-cloro-2-oxo-N-fenil-4-arilazetidina-1-carboxamida (**3a-3g**) y evaluar su actividad antibacteriana in vitro. Los compuestos **3a-3g** se sintetizaron haciendo reaccionar varios derivados de 1-ariliden-3-fenilurea (bases de Schiff, **2a-2g**) con cloruro de cloroacetilo en presencia de dimetilformamida, trietilamina y 1,4-dioxano. Las bases de Schiff **2a-2g** se sintetizaron mediante la reacción de fenil urea (1) con aldehídos aromáticos apropiados. El compuesto **1** se sintetizó mediante la reacción de anilina con urea en presencia de ácido acético glacial y ácido clorhídrico concentrado. Los compuestos sintetizados **3a-3g** se establecieron mediante análisis infrarrojo (IR), magnético nuclear de protones (^{1}HNMR) y de espectro de masas. Los compuestos **3g** con el grupo 4-dimetilaminofenilo exhibieron una buena actividad antimicrobiana contra las bacterias Gram-positivas y el compuesto **3d** con el grupo 4-metilfenilo exhibieron una buena actividad antimicrobiana contra las bacterias Gram-negativas. La ciprofloxacina se utilizó como fármaco estándar.

KEY WORDS: antibacterial activity, 2-azetidinones, Schiff's base, Synthesis.

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