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Evaluating the potentiating effect of galbanic acid from Ferula szowitsiana on three common antibiotics against resistant hospital isolates of Staphylococcus aureus

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Abstract

The plant kingdom constitutes a source of new chemical compounds, which may be important due to their potential uses in medicine, or their other biological properties. In this study, the effects of Galbanic acid (GA), a sesquiterpene coumarin from roots of Ferula szowitsiana, were investigated as a modulator of antibiotic resistance in clinical isolates of Staphylococcus aureus. Isolates of S. aureus clinically resistant to methicillin, tetracycline and ciprofloxacin were isolated using disk diffusion method. The MICs of antibiotics were determined using broth macrotiter plate method against isolated bacteria. The inhibitory effects of GA alone and in combination with each antibiotic were investigated by macrotiter plate. None of the tested bacteria were affected by GA (up to ٨٠٠ μg/mL). MICs of antibiotics against S. aureus (in μg/mL) were ١٠-٨٠ for methicillin, ٤٠->٨٠ for tetracycline, and ١٠-٢٠ for ciprofloxacin. The MICs of antibiotics in presence of ٤٠٠ μg/mL GA were less than ١,٢٥ μg/mL for S. aureus, which is usually much less than the MICs against sensitive isolates. This study provides interesting results suggesting a potentiating activity of GA on antibiotics against the resistant strains of S. aureus. Copyright © ٢٠٠٩ by School of Pharmacy Shaheed Beheshti University of Medical Sciences and Health Services.

Reaxys Database Information

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Author keywords

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Indexed Keywords

EMTREE drug terms: ciprofloxacin; galbanic acid; meticillin; tetracycline

EMTREE medical terms: antibiotic resistance; article; controlled study; drug potentiation; fennel; Ferula szowitsiana; minimum inhibitory concentration; nonhuman; plant root; Staphylococcus

Chemicals and CAS Registry Numbers: ciprofloxacin, ٨٥٧٢١-٣٣-١; galbanic acid, ٣٥٦٦-٥٥-٠; meticillin, ١٣٢-٩٢-٣, ٣٨٨٨٢-٧٩-٠, ٦١-٣٢-٥; tetracycline, ٢٣٨٤٣-٩٠-٥, ٦٠-٥٤-٨, ٦٤-٧٥-٥
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