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The combination effect of curcumin with different antibiotics against Staphylococcus aureus

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Abstract

The different investigation has been carried out on the biological activities of curcumin but the effect of this natural product on the antibacterial activity of different antibiotics has not been demonstrated. In this study the enhancement effect of curcumin on the antibacterial activity of different antibiotics was evaluated against Staphylococcus aureus. Disk diffusion method was used to determine the antibacterial activity of these antibiotics in the absence and presence of sub inhibitory concentration of curcumin. A clinical isolate of S. aureus was used as test strain. In the presence of sub-inhibitory concentration of curcumin (٥٠٠ μg/disc) the antibacterial activities of cefixime, cephotaxime, vancomycin and tetracycline have been increased against test strain. The highest fold increase in area was observed for cefixime against S. aureus (a ٥٢,٦ % increase in inhibition zone surface area). Also the increases in inhibition zone areas (%) for cephotaxime, vancomycin and tetracycline were ٢٤,٩٪, ٢٦,٥٪ and ٢٤,٤٪, respectively. No enhancing effect on the antibacterial activities of others antibiotics was detected against S. aureus at content of ٥٠٠μg/disc. Conversely, in case of nalidixic acid, curcumin showed an antagonistic effect on the antibacterial activity of this antibiotic against test strain. These results signify that the curcumin potentiates the antimicrobial action of cefixime, cephotaxime, vancomycin and tetracycline suggesting a possible utilization of this edible compound in combination therapy against S. aureus.

Author keywords

Antibacterial activity; Combination effect; Curcumin; Staphylococcus aureus

Indexed Keywords

EMTREE drug terms:amikacin; bacitracin; carbenicillin; cefalexin; cefepime; cefixime; cefotaxime; ceftazidime; ciprofloxacin; clindamycin; cotrimoxazole; curcumin; erythromycin; gentamicin; kanamycin; meticillin; nalidixic acid; nitrofurantoin; penicillin G; rifampicin; streptomycin; tetracycline; ticarcillin; tobramycin; vancomycin

EMTREE medical terms: antibacterial activity; article; drug antagonism; drug effect; drug efficacy; drug potentiation; nonhuman; Staphylococcus aureus

Chemicals and CAS Registry Numbers: amikacin, ٣٧٥١٧-٢٨-٥, ٣٩٨٣١-٥٥-٥; bacitracin, ١٤٠٥-٨٧-٤; carbenicillin, ١٧٢٣٠-٨٦-٣, ٤٦٩٧-٣٦-٣, ٤٨٠٠-٩٤-٦; cefalexin, ١٥٦٨٦-٧١-٢, ٢٣٣٢٥-٧٨-٢; cefepime, ٨٨٠٤٠-٢٣-٧; cefixime, ٧٩٣٥٠-٣٧-١; cefotaxime, ٦٣٥٢٧-٥٢-٦, ٦٤٤٨٥-٩٣-٤; ceftazidime, ٧٢٥٥٨-٨٢-٨; ciprofloxacin, ٨٥٧٢١-٣٣-١; clindamycin, ١٨٣٢٣-٤٤-٩; cotrimoxazole, ٨٠٦٤-٩٠-٢; curcumin, ٤٥٨-٣٧-٧; erythromycin, ١١٤-٠٧-٨, ٧٠٥٣٦-١٨-٤; gentamicin, ١٣٩٢-٤٨-٩, ١٤٠٣-٦٦-٣, ١٤٠٥-٤١-٠; kanamycin, ١١٠٢٥-٦٦-٤, ٦١٢٣٠-٣٨-٤, ٨٠٦٣-٠٧-٨; meticillin, ١٣٢-٩٢-٣, ٣٨٨٨٢-٧٩-٠, ٦١-٣٢-٥; nalidixic acid, ٣٨٩-٠٨-٢; nitrofurantoin, ٥٤-٨٧-٥, ٦٧-٢٠-٩; penicillin G, ١٤٠٦-٠٥-٩, ٦١-٣٣-٦; rifampicin, ١٣٢٩٢-٤٦-١; streptomycin, ٥٧-٩٢-١; tetracycline, ٢٣٨٤٣-٩٠-٥, ٦٠-٥٤-٨, ٦٤-٧٥-٥; ticarcillin, ٢٩٤٥٧-٠٧-٦, ٣٤٧٨٧-٠١-٤, ٤٦٩٧-١٤-٧; tobramycin, ٣٢٩٨٦-٥٦-٤; vancomycin, ١٤٠٤-٩٠-٦, ١٤٠٤-٩٣-٩
Manufacturers:Drug manufacturer: Sigma.

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