



The 6th International Electronic Conference on Medicinal Chemistry (ECMC 2020)

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ΒΕΒΑΙΩΣΗ ΣΥΜΜΕΤΟΧΗΣ

ΒΕΒΑΙΟΥΤΑΙ ότι ο κ.

ΚΩΝΣΤΑΝΤΙΝΟΣ ΤΣΙΑΝΤΑΣ

Παρακολούθησε το
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Μέλος της Euro Fed Lipid



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Για την οργανωτική επιτροπή
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25/11/2022



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BOOK OF ABSTRACTS



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PC-43

Nanocomposite alginate hydrogels incorporating silver nanoparticles: a green approach towards smart antimicrobial materials

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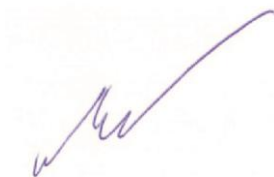
Silver nanoparticles (AgNPs) are widely used in various biomedical applications due to their antimicrobial activity. In the present work AgNPs were synthesized in a greener approach using alginate hydrogel and olive leaf extract with Natural Deep Eutectic Solvents (NADES) consisting of glucose and lactic acid [1], [2]. The aim was to evaluate the antimicrobial activity of the synthesized hydrogels against bacterial pathogens. Swelling ratio and water retention ratio were measured by soaking the hydrogel in a phosphate buffer (pH=5.5). The alginate nanocomposite hydrogel reached a swelling ratio of 1220% after 50 min. The water retention remained over 60% after keeping the swollen sample in the buffer for 2 h, showing the maximum value at 3 h. The AgNPs-NADES-olive leaf extract hydrogels were analysed by the Nanoparticle Tracking Analyzer (Nanosight NS300) at a concentration 1mg/mL. The average size of nanoparticles was found 103.2 +/- 5.6 nm and their concentration was 1.21*10⁸/mL. Antimicrobial activity was tested against the gram-negative *Escherichia coli* ATCC 25922 and *Salmonella Typhimurium* ATCC 14028 and the gram-positive *Listeria monocytogenes* ATCC 35152, *Staphylococcus aureus* ATCC 6538 and *Bacillus cereus* NCTC 10320/ATCC 9634 by automatic turbidimetry with Bioscreen C. Data were processed with the ComBase tool DMFit for Excel to estimate microbial kinetic parameters, such as the specific growth rate (μ) and lag time of the growth curve of microorganisms. Hydrogels with NADES-olive leaf extract and AgNPs showed the highest antimicrobial activity against all tested bacteria, followed by hydrogels with NADES-olive leaf extract. *S.aureus* was the most sensitive to hydrogels, showing 79.1% inhibition of growth rate, as well as *E.coli* and *Y.enterocolitica* (64.9% and 60.6% respectively). *Bacillus cereus* was inhibited by 51.8% by the AgNP hydrogel, whereas the least sensitive was *L.monocytogenes* (25.5%).

CERTIFICATE OF ATTENDANCE

This is to certify that

Konstantinos Tsiantas

attended the “**13th International Conference on Instrumental Methods of Analysis: Modern Trends and Applications**” which took place in Chania-Crete, 17-20 September 2023 and was organized by the Technical University of Crete and the National Technical University of Athens.



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