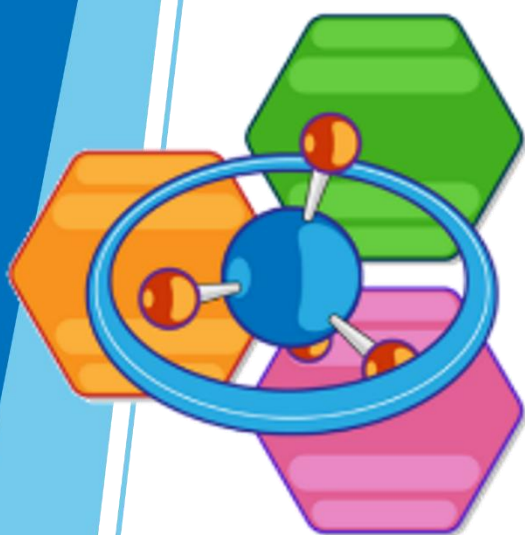


# MERCK



# MYCS 2025

## BOOK OF ABSTRACT

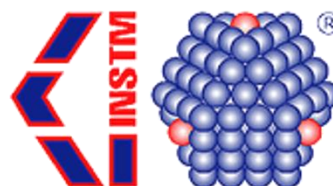
1<sup>st</sup>-3<sup>rd</sup> December 2025

Hotel Continental and Hotel Sporting  
Rimini (IT)



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Chimica  
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## Synthesis and biological evaluation of 1,2,4-oxadiazole salts and derived functional materials

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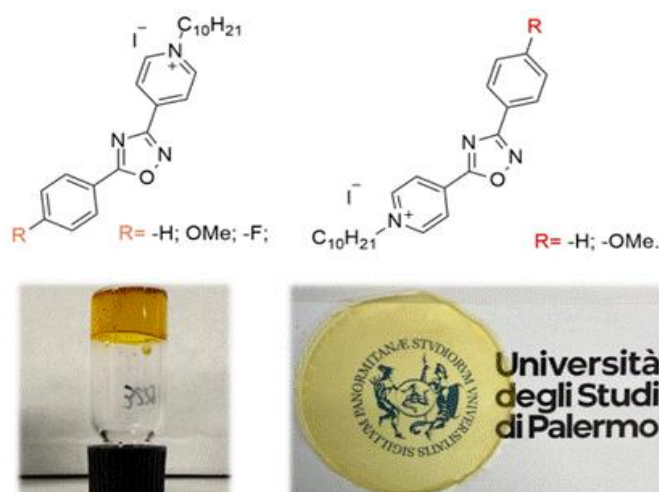
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The worldwide rise in antibacterial resistance makes common antibiotics and standard procedures ineffective, providing a significant challenge to contemporary medicine. [1] This phenomenon is not confined to certain clinical environments; rather, it is a systemic issue with implications in surgery, oncology, and the implantation of medical devices. [2] For this purpose, drawing inspiration from a previously published study, [3] a variety of new 1,2,4-oxadiazole pyridinium salts have been synthesized and characterized.

Initially, 37 compounds were tested in vitro against Gram-positive *S.aureus* and Gram-negative *E.coli* standard strains via dilution and minimal inhibition concentration (MIC) assay. Subsequently, the 5 most active salts were tested against multidrug resistant strains (*K.pneumoniae*, *E.coli*, *S.aureus*, *S.haemolyticus* and *E.faecium*). In addition, their cytotoxicity, hemolytic activity, and selectivity index have been evaluated. After the incorporation into PVC films and glycerol gels, disk diffusion tests and diffusion in aqueous solution have been performed, demonstrating sustained antibacterial activity (i.e. zone of inhibition from 8 to 17 mm). The current study represents an initial step towards the development of possible antibacterial coatings for medical implants.



**Figure 1:** General structures of antibacterial salts, example of derived glycerol-based gel (left) and PVC film (right).

[1] U. Theuretzbacher, *Journal of Global Antimicrobial Resistance*, 2013, 1, 63-69.

[2] E. Avershina, V. Shapovalova, G. Shipulin, *Frontiers in Microbiology*, 2021, 12.