TITLE: ANTIBACTERIAL ACTIVITIES OF THE SYNTHETIC COMPOUNDS AGAINST *PSEUDOMONAS AERUGINOSA*, *KLEBSIELLA PNEUMONIAE*, *ACINETOBACTER BAUMANNII* AND *STAPHYLOCOCCUS AUREUS*.

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ABSTRACT:

Multidrug-resistant (MDR) bacterias are usually related to healthcare-associated infections (HAI). Further, they are associated with a selective pressure increase, indiscriminate use of antibiotics and long duration of hospitalization, which diminishes available treatment options. Thus, analyzing compounds with antimicrobial activity represents new options to treat HAI, due to the extensive biological and pharmacological activities. The objective of this study was to evaluate the antimicrobial activity of the synthetic compounds thiazole, riparins and eugenol analogs against *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, and *Staphylococcus aureus* isolates by analyzing articles published between 2005 and 2015. Articles analyzed were published in the following database: Scientific Electronic Library Online (SciELO) and National Center for Biotechnology Information (Pubmed/NCBI). Researchers in 2005 and 2010 tested riparins I, II and III in order to understand their influence on the elimination of plasmid encoding resistance by bacterial death curve method. Results of these researches were the recognition of a huge antimicrobial potential against MDR *S. aureus* and *Escherichia coli*. Among riparins, riparin II showed bactericidal activity in the elimination of Penillicin resistance gene. In the year of 2011, studies determined the antimicrobial activity, in an *in vivo* setting, of thiazole compounds against *A. baumannii* carbapenem-resistant and *K. pneumoniae*. Its combination with antimicrobial Glycopeptides showed antibiofilm activity in MRSA (Methicillin-resistant S. aureus) strains in 2015. Eugenol analogs were proven to be effective against *S. aureus* strains in 2014. Their effectiveness was proven by microdilution and agar dilution tests, ending up in significant inhibition of biofilm production. In the following year, total growth inhibition of *Pseudomonas* sp reference strain was described, by tests in an *in vitro* setting. Thus, this analyze shows the antimicrobial activity of the studied compounds against clinically important bacteria, suggesting a probable new therapeutical strategy to HAI.

Keywords: Thiazole. Eugenol analogs. Riparins. Antimicrobial activity.
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