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## Abstracts Book



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### ANTIBIOFILM PROPERTIES OF *QUERCUS ILEX* ACORN EXTRACTS AGAINST MRSA AND MSSA

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Biofilms are complex structures that grant microorganisms some survival advantages namely nutrient availability and antimicrobial resistance. As such, the need to find new antimicrobial compounds that are active against these structures is in great demand. Phenolic compounds are described as capable of interfering with the cellular membrane and interact with both intracellular and extracellular proteins, thus they may present an alternative to traditional biofilm control.

Acorns have been reported as a rich source of phenolic compounds, particularly tannins, and thus are likely to exhibit some of the properties that are associated with these compounds, namely antimicrobial properties. As such, the present work aimed to assess the antibiofilm properties of hydroethanolic, phenolic rich, acorn extracts against two *Staphylococcus aureus* strains, one sensitive (MSSA) and one resistant (MRSA) to methicillin. To do so, both microorganisms were exposed to two different sub-MIC concentrations of extracts produced using acorn shells (fresh and roasted) and cotyledons (fresh or roasted). The amount of biofilm produced in the presence of the extracts, after 48 h, was then determined using the microtiter – crystal violet based assay. The results obtained showed that MRSA was the most sensitive strain, with biomass inhibition percentages ranging from 60 to 70%, while for MSSA all inhibition percentages ranged between 29 to 57%. No significant differences between shell and cotyledon were found when considering the results obtained for MRSA. The same was not observed for MSSA where biomass production was significantly higher for roasted cotyledon (2.5 to 20.6%). For this microorganism, it was interesting to note that lower concentrations of the extracts appeared to possess a higher antibiofilm activity (0.7 times more active for fresh or roasted shell extract and 0.6 times more active for fresh cotyledon extracts).

Overall, these results indicate that *Quercus ilex* acorns possess the potential to be an effective means of biofilm control though further studies are still required to fully ascertain their true potential.