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Evaluation of the bacterial activity of natural compounds

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Introduction: Medicinal plants with therapeutic properties are an important source of new biologically active compounds. They present great potential for therapeutics and prevention applications. The use of plant extracts and phytochemical products, both with known antimicrobial properties, is of great importance in the treatment of infectious diseases, where resveratrol, propolis and chamomile stand out.

Material and methods: The bacterial activity of resveratrol, propolis and chamomile was assessed. Firstly, was performed the compounds extraction in ethanolic medium at 70 and 30ºC and in aqueous medium at 100 and 80ºC. The crude extract was dried in a rotary evaporator at 40ºC for ethanolic extractions and at 60ºC for aqueous extractions. Bacterial activity was evaluated based on CLSI methods for antimicrobial susceptibility tests with modifications, using 5 strains, one gram-negative and 4 gram-positive strains, for both crude and concentrated extracts. It was assessed the size of the inhibition halo after 24h at 37ºC.

Results: Resveratrol extract presented the highest inhibition halos, indicating increased anti-bacterial activity. The anti-bacterial effect was higher in concentrated extracts, in both ethanolic and aqueous extracts, than in the respective crude extracts. The results of the aqueous and ethanolic extracts of propolis and chamomile were not satisfactory, since the inhibition halo was inferior than the resveratrol extracts, demonstrating a lower anti-bacterial activity. However, for these two compounds, the concentrated extracts showed a higher inhibition than the crude extracts.

Conclusion: Thus, resveratrol was the compound that showed a higher anti-bacterial activity, demonstrating its potential for the use at an industrial scale.

Keywords: anti-bacterial activity, medicinal plants, natural compounds, resveratrol.