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Red grape pomace extract: bioactive potential against bacteria, fungi and SARS-CoV-2

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The outbreak of COVID-19 disease caused by SARS-CoV-2 forced the scientific world to search for new alternatives to help control the virus. Grape pomace, which is an industrial residue obtained from the winemaking process, has bioactive compounds derived from the grape [1], which can be a starting point for research on the use of this residue as a source of new antiviral agents. Thus, the objective of this study was to obtain an extract from the by-product of red grapes discarded by the wine industry in Portugal to be used as an antiviral agent with possible application in disinfectants, fabrics or other materials.

The red grape pomace extract was obtained by maceration in a hydroethanolic solution (ethanol:H₂O 50:50 v/v) under optimized conditions and submitted to freeze drying. The extract was tested against pathogenic bacteria and a variety of fungi, and the antiviral activity was evaluated for SARS-CoV-2 in Vero cells.

The extract showed antimicrobial activity against a large number of bacteria tested, e.g., *B. cereus* (1.56 mg/mL), *L. monocytogenes* and *S. aureus* (3.125 mg/mL), and *E. coli* and *S. Typhimurium* (50 mg/mL). Regarding its antifungal potential, this extract did not show inhibition against the environmental fungi tested, however, it inhibited two of the tested dermatophytes. *T. mentagrophytes* and the yeast *M. furfur* at a concentration of 6.25 mg/mL and 50 mg/mL, respectively. Regarding the antiviral activity, the results achieved for the viral titer was 6000 PFU/mL, the antiviral activity for SARS-CoV-2 was 1.36 ± 0.15 Mv and the percentage of reduction was of $95.38 \pm 1.54\%$.

The results showed that the obtained extract revealed consistent results of antiviral activity, presenting a potential for applications against SARS-CoV-2. In addition, it showed potential against some bacterial pathogens and fungal dermatophytes. Further studies are required for the validation and application of this extract.

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References:

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