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## Evaluation of the Antioxidant and Antimicrobial Activities of Ethyl Acetate Extract of *Saccharomyces cerevisiae*

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### Key words:

*Saccharomyces cerevisiae*, secondary metabolites, free radicals, bacterial pathogen

### Summary:

**Research background.** Antioxidants are described as important compounds that are present at low concentrations to inhibit oxidation processes. Due to the side effects of synthetic antioxidants, research interest has increased considerably towards finding natural sources of antioxidants that can replace synthetic antioxidants. The emergence and spread of antibiotic resistance require the development of new drugs or some potential sources of novel medicine. This work aims to extract the secondary metabolites of *Saccharomyces cerevisiae* using ethyl acetate as a solvent and to determine the antioxidant and antimicrobial activities of these extracted metabolites.

**Experimental approach.** The antioxidant activities of the secondary metabolites of *S. cerevisiae* were determined using DPPH, ABTS, and FRAP assays. Furthermore, the antimicrobial potential of the ethyl acetate extract of *S. cerevisiae* in treating *Cutibacterium acnes*, *Staphylococcus aureus*, and *Staphylococcus epidermidis* was assessed.

**Results and conclusions.** Five out of 13 of the extracted secondary metabolites were identified as antioxidants. The antioxidant activity of the *S. cerevisiae* extract exhibited relatively high IC<sub>50</sub> of 455.2689 and 294.51 µg/mL for DPPH and ABTS respectively while the FRAP value was obtained as 44.4004 µg AAE/mL. Moreover, the extracts presented a significant antibacterial activity (p<0.05) against *Staphylococcus aureus* and *Staphylococcus epidermidis* at the concentrations of 100 and 200 mg/mL, respectively. However, no inhibitory effect was observed against *Cutibacterium acnes* as the extract was only effective against *Cutibacterium acnes* at the concentrations of 300 and 400 mg/mL (inhibition zones ranging from 9.0±0 to 9.333±0.577) respectively (p<0.05). *Staphylococcus aureus* was highly sensitive to the extract, with a MIC value of 18.75 mg/mL.

**Novelty and scientific contribution.** This report confirmed the efficacy of the secondary metabolites of *S. cerevisiae* as a natural source of antioxidants and antimicrobials and suggest the possibility of employing them in drugs for the treatment of infectious diseases caused by the tested microorganisms.

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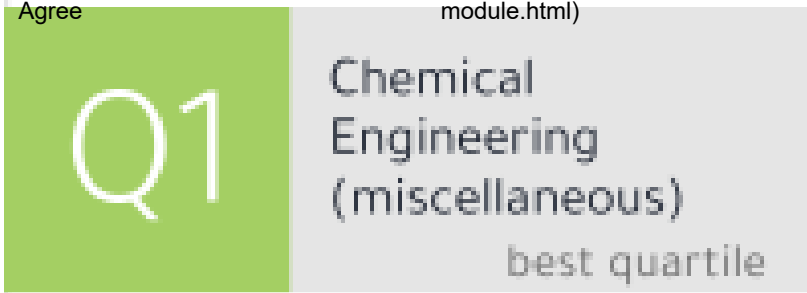
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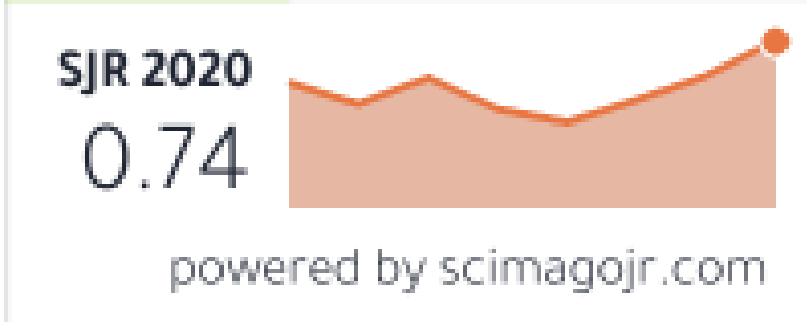
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