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CONTENT

BIOCONTROL POTENTIAL OF SURFACTANTS FROM *RHODOCOCCUS ERYTHROPOLIS* IMV Ac-5017: AN ALTERNATIVE TO CHEMICAL PESTICIDES IN THE DESTRUCTION OF PHYTOPATHOGENIC DUAL-SPECIES BIOFILMS

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The use of toxic agrochemicals in crop production poses risks of ecosystem contamination (Calefi et al., 2025). Microbial surfactants are regarded as a promising alternative to chemical pesticides (Ashby et al., 2020). Previous studies have shown that surfactants of *Rhodococcus erythropolis* IMV Ac-5017, synthesised in a medium supplemented with tryptophan (Pirog et al., 2024) or a yeast inducer (unpublished data), exhibited enhanced biological activity against phytopathogens.

R. erythropolis IMV Ac-5017 was cultivated in a liquid mineral medium containing 2% (*v/v*) ethanol, tryptophan (300 mg/L), or erythritol (400 mg/L). The supernatant of *Saccharomyces cerevisiae* BTM-1 was used as an inducer. The concentration of extracellular surfactants was determined gravimetrically after extraction using a modified Folch mixture. The degree of biofilm disruption (%) was determined spectrophotometrically.

The addition of *S. cerevisiae* BTM-1 supernatant to a medium containing erythritol or tryptophan resulted in the production of surfactants with higher disruption activity against phytopathogenic biofilms compared with preparations obtained without an inducer. The destruction of *Clavibacter michiganensis* subsp. *michiganensis* IMV B-10_2 – *Xanthomonas vesicatoria* UCM B-1106 dual-species biofilms reached 44.1-54.3 and 22.2-44.4% under the action of surfactants (0.94-3.75 μg/mL) produced in the presence of the supernatant and erythritol or tryptophan, which was 5.5-44.4% higher than that of surfactants synthesised with phytohormone biosynthesis precursors alone.

Thus, the study have shown a significant increase in the biological activity of *R. erythropolis* IMV Ac-5017 surfactants against dual-species phytopathogenic biofilms when a yeast inducer and phytohormone biosynthesis precursors were added to the cultivation medium.

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