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J Appl Bacteriol. 1995 Oct;79(4):393-8.

Antibacterial polyphenols from olive oil mill waste waters.

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Abstract

Olive oil vegetation waters (VW) were highly toxic to both phytopathogenic *Pseudomonas syringae* (Smith, Yung et al.) pv. *savastanoi* (Gram-negative) and *Corynebacterium michiganense* (Gram-positive) and showed bactericidal **activity** in their original concentration (in raw form). Among the main polyphenols, present in the waste waters, methylcatechol proved to be the most toxic to *Ps. savastanoi* at 10^{-4} mol l⁻¹, and also demonstrated bactericidal **activity**, while on *Coryne. michiganense* it was only slightly active; catechol and hydroxytyrosol were less active on *Ps. savastanoi*, but inactive on *Coryne. michiganense*; tyrosol and its synthetic isomers 1,2- and 1,3-tyrosol were completely inactive on both bacteria. Among the derivatives of VW polyphenols considered, acetylcatechol and guaiacol were selectively toxic for *Ps. savastanoi*, while o-quinone was strongly toxic for both bacteria. The minor carboxylic polyphenols of VW at 10^{-4} mol l⁻¹ were all inactive on the bacteria. VW, catechol, 4-methylcatechol and the less abundant carboxylic polyphenols proved to be toxic on Hep2 human cells. Finally the possibility of using the active polyphenols in agriculture in an integrated pest management program for the protection of the **olive** plant is discussed.

PMID: 7592132 [PubMed - indexed for MEDLINE]

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