

Antifungal activity of resveratrol against botrytis cinerea is improved using 2-furyl derivatives

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The antifungal effect of three furyl compounds closely related to resveratrol, (E)-3,4,5-trimethoxy-2-(2-furyl)-styrene (**1**), (E)-4-methoxy-2-(2-furyl)-styrene (**2**) and (E)-3,5-dimethoxy-2-(2-furyl)-styrene (**3**) against Botrytis cinerea was analyzed. The inhibitory effect, at 100 $\mu\text{g ml}^{-1}$ of compounds 1,2,3 and resveratrol on conidia germination, was determined to be about 70%, while at the same concentration pterostilbene (a dimethoxyl derivative of resveratrol) produced complete inhibition. The title compounds were more fungitoxic towards in vitro mycelial growth than resveratrol and pterostilbene. Compound 3 was the most active and a potential explanation of this feature is given using density functional theory (DFT) calculations on the demethoxylation/demethylation process. Compound 3 was further evaluated for its effects on laccase production, oxygen consumption and membrane integrity of B. cinerea. An increase of the laccase activity was observ