

## ANTIMICROBIAL ACTIVITY OF NATURAL PHENOLICS AGAINST FOOD SPOILAGE YEASTS

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Plant polyphenols represent a class of natural products important in plant defense against microbial pathogens. Such natural compounds have been shown to exhibit antimicrobial properties against spoilage microorganisms. In this study, we investigated the growth, biofilm formation, and adhesion inhibitory properties of different classes of phenolic compounds against spoilage yeasts, namely *Pichia anomala*, *Saccharomyces cerevisiae*, *Schizosaccharomyces pombe*, and *Debaryomyces hansenii*. Most tested phenolics significantly inhibited the planktonic and biofilm growth of yeasts. Cinnamic acid and vanillin exhibited the highest antimicrobial activity on the yeast strains. Cinnamic acid inhibited the growth of all studied yeasts by >90% and it showed 87% eradication activity against the *S. pombe* biofilm. Vanillin had >90% growth inhibition in *D. hansenii* and *P. anomala* and 97% biofilm inhibition in *D. hansenii*. In *S. pombe*, checkerboard assay showed 16- and 4-fold reductions in MIC of (–)-epicatechin and cinnamic acid, respectively, in the presence of vanillin. For vanillin and (–)-epicatechin combination, synergy was observed at 1 mg/ml vanillin and 0.25 mg/ml (–)-epicatechin concentrations, while it was occurred at 1 mg/ml vanillin and 0.125 mg/ml cinnamic acid concentrations in the mixture of vanillin and cinnamic acid. Fluorescence microscopy analysis revealed the disruption of the biofilm matrix by the phenolics. These findings suggest that natural phenolics can be crucial interventions against food spoilage yeasts. This research was supported by the NKFI FK 134886 and connected to the project GINOP-2.3.2-15-2016-00052.