

COMBINED ACTION OF NATURAL PHENOLICS AND SYNTHETIC PRESERVATIVES AGAINST FOOD SPOILAGE YEASTS

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In recent years the search for safe and environmentally friendly methods of food preservation has gained attraction as sustainability and food waste reduction becomes crucial in the food systems. Plant phenolics have received great attention due to their natural origin and broad bioactivity. These compounds could alleviate safety concerns associated with chemical additives. The present investigation aimed at determining the antimicrobial efficacy of binary combinations of natural phenolics and synthetic additives against planktonic and biofilm growth of food spoilage yeasts as well as their antiadhesive properties using the checkerboard method. The phenolics used were vanillin and cinnamic acid, while the synthetic additives were sodium benzoate, potassium sorbate and sodium diacetate. The results demonstrated synergistic interaction between vanillin and sodium benzoate against planktonic growth of *Pichia anomala* with a fractional inhibitory concentration index (FICI) of 0.47. In *Schizosaccharomyces pombe* and *Saccharomyces cerevisiae*, synergism was observed between vanillin and potassium sorbate for their planktonic growth with FICI values of 0.5 and 0.33, respectively. Synergism was also observed in *S. pombe* when vanillin and potassium sorbate combinations were used as antiadhesive agents with FICI value of 0.375. Most of the binary combinations of phenolics and synthetic antimicrobials revealed additive effect against the biofilm growth of food spoilage yeasts. Our results showed that some plant phenolics as additives may reduce the concentration of synthetic compounds to be used in preservation. These natural substances can provide numerous alternatives in food preservation. This research was supported by NKFI FK 134886.