

### PP3. The use of essential oils for antimicrobial food packaging

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Despite extensive efforts to control microbial and chemical contamination of foods, foodborne infections continue to have a significant economic and social impact. Given that 99.8% of all food and beverages will have to be encased in some sort of packaging during their existence, food industry is constantly evolving by introducing new technologies that enhance product quality and shelf-life. In this work we will focus on the development of antimicrobial food packaging as a means to control microbial contamination of foods and the transmission of foodborne pathogens to humans while also improving product shelf-life. Specifically, we propose to incorporate essential oils and their major compounds in several packaging materials ranging from paper to plastics. Cinnamon essential oil-based paper packages proved to be effective in controlling mold growth on cherry tomatoes [1]; while plastic-based ones displayed *in vitro* efficacy against several bacteria and fungi (*Escherichia coli* O157:H7, *Saccharomyces cerevisiae*, *Aspergillus flavus*, *Penicillium roqueforti*, *Penicillium expansum*, among others) and were able to successfully increase the shelf-life of tomato puree, bakery products, fruit jams and sliced bread [2]. Oregano essential oil-based antimicrobial food packages proved to be effective in reducing *E. coli* O157:H7 counts both *in vitro* and in sheep cheese [3]. Antimicrobial labels containing benzyl isothiocyanate proved to be effective in reducing *Aspergillus ochraceus* growth as well as the production of ochratoxins A and B [4]. Overall, these packaging systems were able to increase shelf-life and reduce microbial contamination in a vast array of food products, suggesting their commercialization as active food packages.

*References:*

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