Title Plant components as antimicrobials and antioxidants for CMC coatings for horticultural products

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Abstract

The atmosphere inside a package can be modified by passive packaging (MAP), where the rate of change and the final gas composition in the package depend largely on both the packaged product and the permeability of the packaging material. Edible coatings can be considered as a special form of MAP. Their application on the surface of horticultural products limits gas exchange and moisture transportation between the food and the surrounding environment and can be the vehicle to include antimicrobials or antioxidants in the edible film; besides these additional characteristics, they changes also the internal atmosphere. In the present work, oregano essential oil (containing 6.6 mg/mL timol and 0.7 mg/mL carvacrol) as antimicrobial agent applied into carboxymethylcellulose (CMC) edible films, were studied on fresh-cut carrots (var. Chanteney), and murta (Ugni molinae TURCZ) leaves extracts as the antioxidant agent, which applied on CMC films studied in apricots (1), were analysed for their glycosilated flavonol content and their antioxidant capacity.

Oregano essential oil applied on CMC edible films on the carrot-sticks were analysed during storage for its antimicrobial behaviour (Enterobacteriaceae and mesophilic microorganisms counts) showing after 5 days a significant inhibition with 2.5 % essential oil in relation to 1.5 % essential oil or without it.

Murta leaves extracted in water for 10 or 90 minutes at 25 °C, show a non significant quantitative difference in the flavonol glycosides extracted. The ecotypes extracts show a positive correlation between total myricetin and quercetin glycosides and the total oxidant scavenging capacity (TOSC) against peroxyl, a slow reactive oxygen species (ROS) and against peroxynitrite. These murta extracts, incorporated in CMC edible films, show different permeabilities to CO_2 and O_2 , and can be used for increasing the shelf-life of different coated horticultural products.