

Title Evaluation of an edible film containing oregano essential oil as antimicrobial agent
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Abstract

Actual trends in Food Science demand preservatives from natural sources as spices. The importance of this work resides in the limited number of reported work on antimicrobial active packaging using spices as antimicrobial agents. Our earlier findings showed that LDPE films containing oregano essential oil had no antimicrobial activity. Some **Title** recommend incorporating chemical preservatives into biopolymers in order to obtain an antimicrobial activity. The aim of this work was to develop an antimicrobial film with oregano essential oil, based on a starch and pectin biopolymers. The inhibitory minimum concentrations of oregano essential oil (OEO) were determined on *S. aureus* and *E. coli*. A biopolymer made from pectin and starch and glycerol as plastificant, was prepared and oil was added at the following concentrations 0, 0.05, 0.1, 0.2, 0.5, 1 and 2%. The film was prepared by casting using a Thin Layer Chromatography apparatus. The polymeric solution was solubilized previously and stirred for 30 min, time after, the plastificant and the oil were added. The solution was poured in plated covered previously with LDPE. Films were air dried for 24 h at room temperature before evaluation. Antimicrobial activity was measured using strains of *S. aureus* and *E. coli*. Our results show a variation on film thickness in the range of 0.043 to 0.052 mm. Growth inhibition of the essential oil varied between strains. *S. aureus* was inhibited depending on essential oil concentration and reached a total inhibition at a concentration of 2%. *E. coli* was inhibited only at high concentrations (2%). The developed plastic films with biopolymers as carriers of oregano essential oil as additive, can be used to inhibit microbial activity, further studies are needed to prove these films on complex systems such as food.