

Development of sustainable active packaging

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In order to reduce the environmental problems that arise from the excessive use of plastics and contribute to the extension of the shelf life of foods without the addition of synthetic additives, the packaging of sustainable and/or biodegradable materials have emerged in national and international research. This being said, the present work aimed to encapsulate thyme essential oil and incorporate the particles into a starch film. For the development of the active film, the particles were produced by the complex coacervation method and their characteristics such as efficiency and morphology were evaluated. The films were activated with 5% microparticles and characterized for their mechanical structure, microscopy and their antimicrobial activity by the agar diffusion method. Antimicrobial activity was observed only in the film incorporated with Thymol microparticles. Thus, it can be inferred that the antimicrobial action of the starch film against the tested microorganisms: the gram-positive bacteria *Staphylococcus aureus*, gram-negative *Escherichia coli* and the fungus *Penicillium* sp. are directly linked to the antimicrobial effect of the Thymol microparticles. That said, the antimicrobial starch active film is a natural and environmentally friendly option for food preservation.