

ABSTRACT

Food preservation includes several methods to inhibit the quality degradation or the food spoilage, in order for them to be acceptable from the consumer, and also safety for his/her health. Microorganisms are mainly responsible for the food spoilage. Therefore, the control and elimination of microorganisms is essential for food preservation.

In the last decade, many methods have been developed to control phytopathogenic fungi. Biocontrol agents, natural antimicrobials, and physical means (UV-C irradiation, modified atmospheres) are used for this purpose. Edible films or coatings, is also promising and innovative controlling method. The edible films can control microorganisms and to extend the shelf-life of food products.

In the present study, the edible coating, made from chitosan, has been placed on plum fruits in which incorporated natamycin; a natural antibiotic that is been used for many years, as a food additive, in cheeses and sausages. The purpose of this application is the protection of plum fruits from the phytopathogenic fungi *Monilinia fructigena* and we compare the efficiency with the other industrial, plant protection product fludioxonil. It has been noticed that the use of 250 ppm of natamycin, either alone or with chitosan, has similar results with the fludioxonil.

After that, we studied the diffusion of natamycin from edible membranes to hydrophilic and lipophilic mediums. Results showed that the diffusion rate of natamycin to hydrophilic medium was high; but it was not diffused in lipophilic medium. Finally, the effect of pH and light exposure ON the stability of natamycin was investigated. Results demonstrated that pH and light exposure can cause decomposition of natamycin.

Overall, the incorporation of natamycin into edible coatings made from chitosan has shown to be effective in controlling the postharvest diseases in plums.

Keywords: plums, *Monilinia fructigena*, natamycin, edible coating, diffusion rate