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## Characterization of electrospun nanofibers encapsulating the antifungal agent natamycin

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The application of nanotechnology provides numerous advantages related to food safety and quality. Some nanostructures, such as eletrospun nanofibers, are versatile vehicles to deliver antimicrobials, reducing the drug amount and promoting a more effective action. The aim of this study was to characterize poly- -caprolactone (PLC) nanofibers functionalized with natamycin produced by electrospinning. The surface morphology of nanofibers was observed by scanning electron microscopy (SEM) and the thermal properties were analyzed by thermogravimetric analysis (TGA) and differential scanning calorimetry (DSC), using a TGA discovery and a DSC Q2000 apparatus, respectively. Fourier transform infrared (FTIR) and near infrared (NIR) spectra were also measured. Four different formulations of nanofiber were tested: PLC dissolved in tetrahydrofuran (THF)/dimethylformamide (DMF) + 0.1% natamycin, PLC dissolved in acetone + 0.1% natamycin, PLC dissolved in dichloromethane/DMF + 0.1% natamycin and PLC with 40 wt% polyethylene glycol and medium-chain triglycerides dissolved in THF/chloroform + 0.1% natamycin. The controls have been developed without natamycin. Preliminary results show that nanofibers present a typical string-like morphology and mean diameter was 221 nm. When natamycin was included in the formulations, an increase in the fiber diameter was observed (292 nm). Infrared spectroscopy studies displayed characteristic peaks for each formulation and similar when compared between control and functionalized nanofibers. The thermograms were specific for the 4 formulations and their respective control. Electrospun nanofibers incorporating natamycin are interesting platforms to deliver antifungal substances in food packaging.

## **Biography**

Ana Carolina Ritter has completed his PhD from Universidade Federal do Rio Grande do Sul (UFRGS) and Post-doctoral studies from Università di Bologna (UNIBO). He is currently interested in developing researches in food science and technology.

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