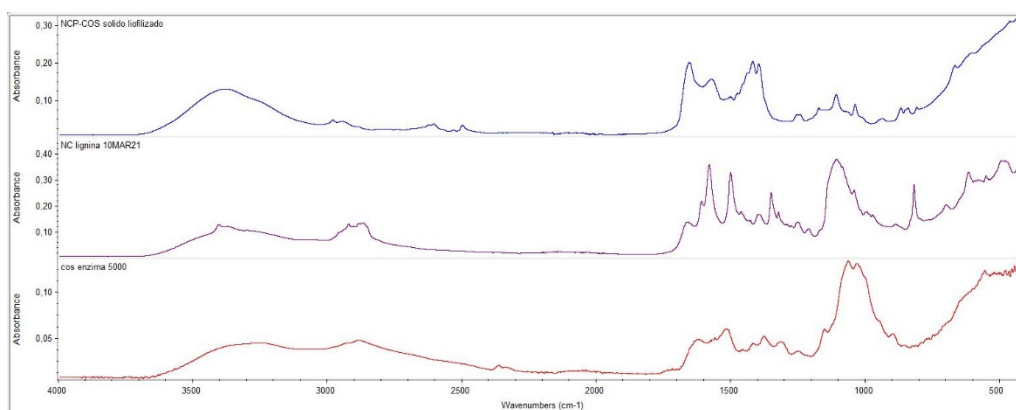


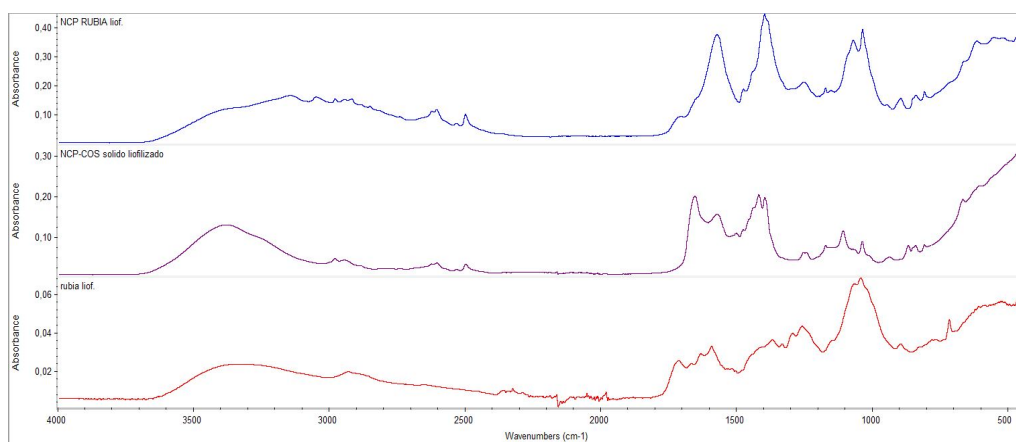
# Lignin–Chitosan Nanocarriers for the Delivery of Bioactive Natural Products against Wood-Degrading Phytopathogens

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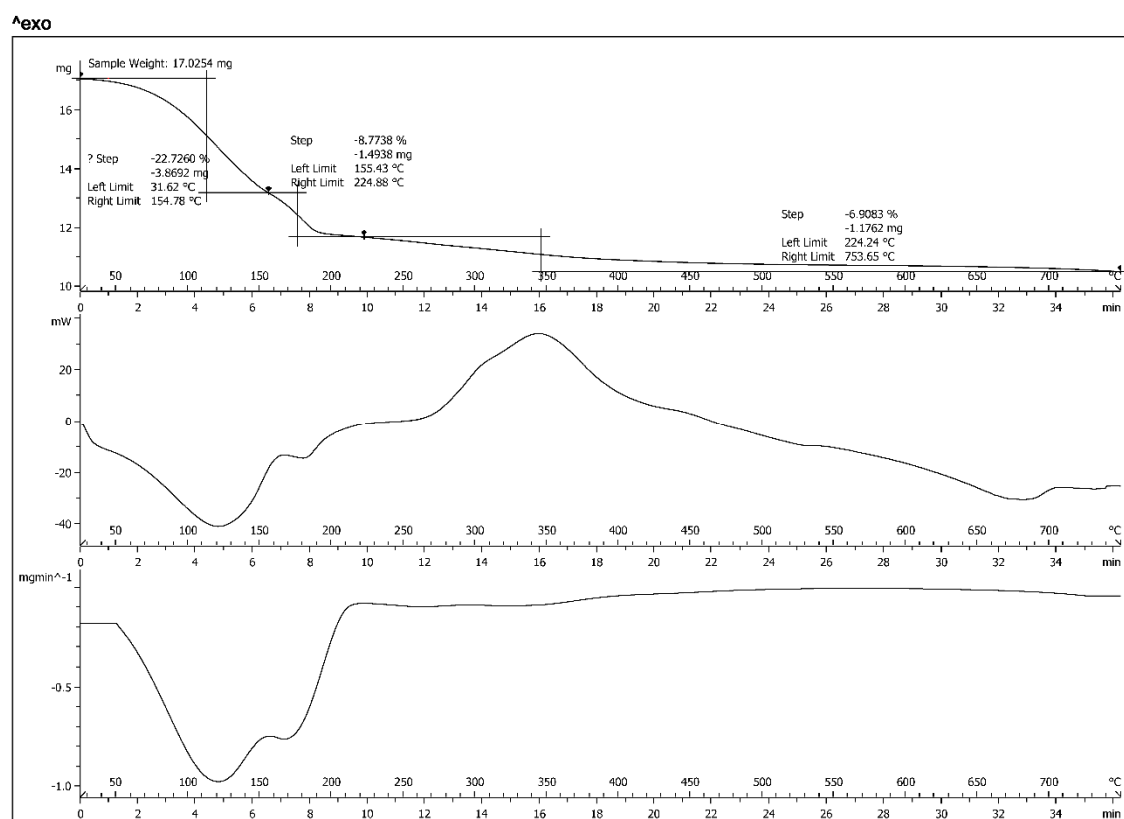
## SUPPLEMENTARY MATERIALS



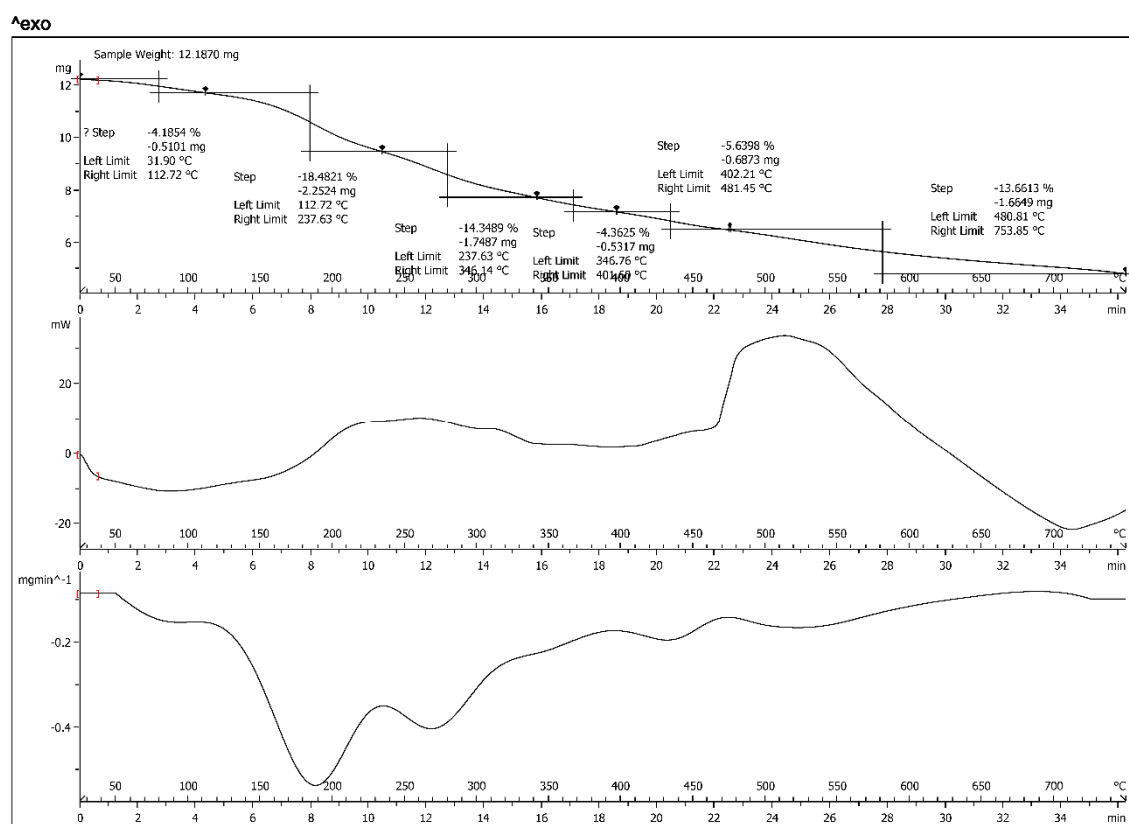
**Figure S1.** Comparison of the ATR-FTIR spectra of the ML–COS nanocarriers (*top*); lignin NCs with synthetic amine crosslinking prepared according to the procedure reported by Fischer *et al.* (2019) (*center*); and enzymatically obtained chitosan oligomers (*bottom*).



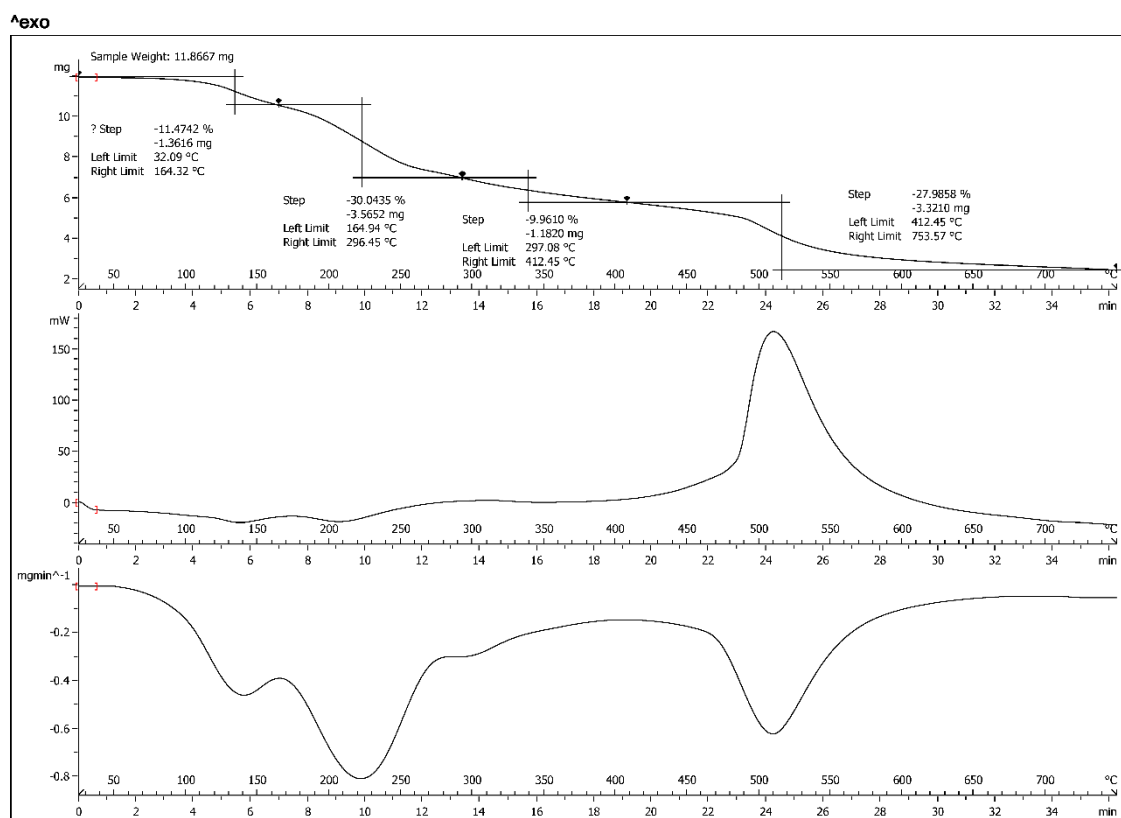
**Figure S2.** Comparison of the ATR-FTIR spectra of the ML–COS NCs loaded with *R. tinctorum* extract (*top*), ML–COS NCs with no encapsulated product (*center*), and the lyophilized *R. tinctorum* extract (*bottom*).



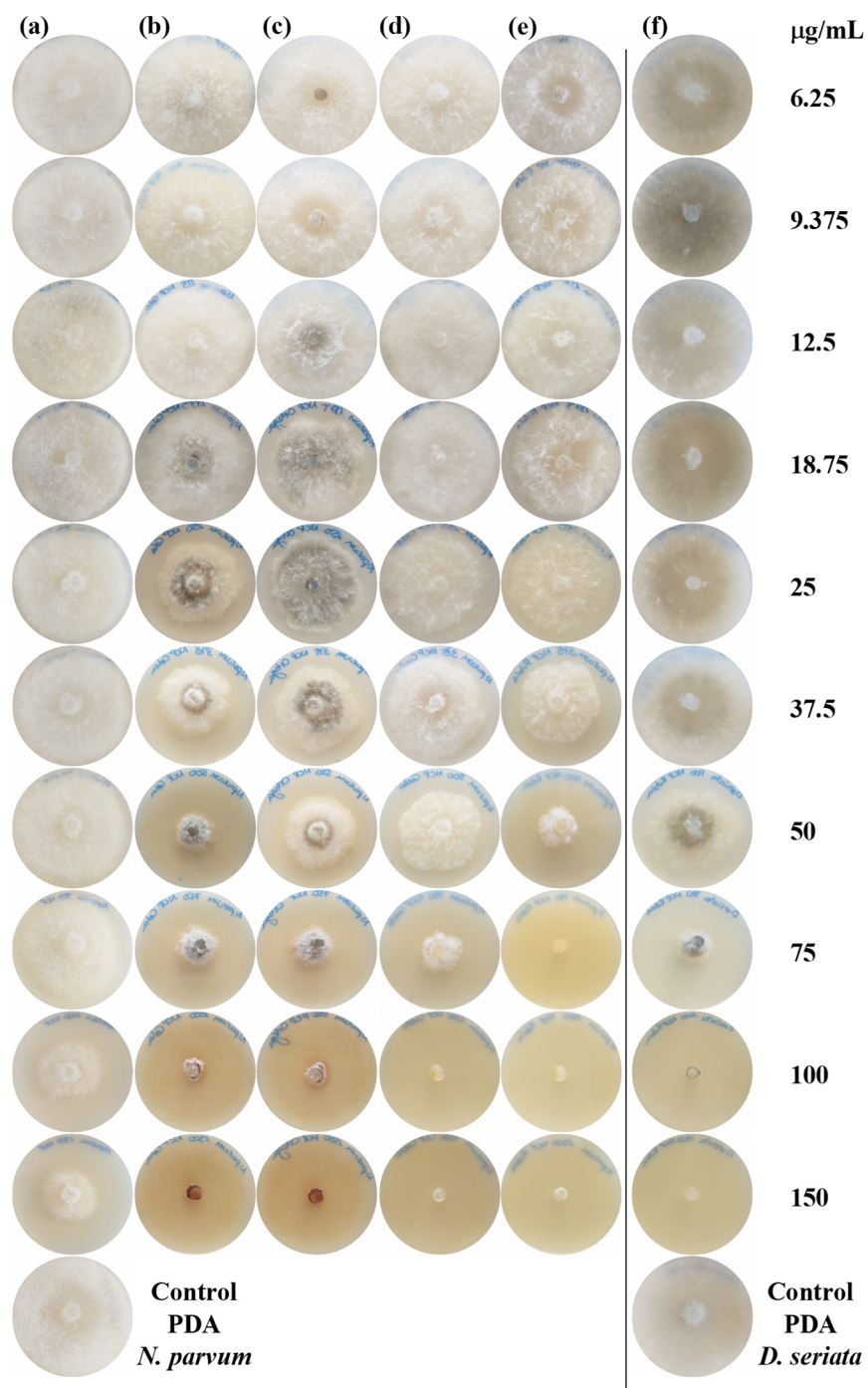
**Figure S3.** Thermal analysis of the ML-COS nanocarriers: TG (*top*), DTG (*center*) and DSC (*bottom*) curves.



**Figure S4.** Thermal analysis of ML-diamine-ML nanocarriers prepared according to the procedure reported by Fischer *et al.* [1]: TG (*top*), DTG (*center*) and DSC (*bottom*) curves.



**Figure S5.** Thermal analysis of the ML-COS nanocarriers loaded with *R. tinctorum* extracts: TG (top), DTG (center) and DSC (bottom) curves.



**Figure S6.** Effect of ML-COS NCs-based treatments at different concentrations (6.25; 9.375; 12.5; 18.75; 25; 37.5; 50; 75; 100; 150 µg·mL<sup>-1</sup>) on the growth of *N. parvum*: (a) ML-COS; (b) ML-COS-*E.arvense*; (c) ML-COS-*U. dioica*; (d) ML-COS-*S. marianum*; (e) ML-COS-*R. tinctorum*; and on the growth of *D. seriata*: (f) ML-COS-*R. tinctorum*.