

1 Supporting info

Figure SI1 displays representative agar plates that show the antibacterial activity results obtained after exposing *E. coli* and *S. aureus* cells (spread on solid agar cultures) to the nanocellulose films embedded with oregano and thyme essential oil. In particular, figures SI1a and b show the test with NAP9_O-0.62 against *S. aureus* and *E. coli*, respectively. The nanocellulose film embedded with oregano essential oil with a concentration of 0.62 mg,oil/mg,film showed 100% of antimicrobial activity against both the pathogens, as shown in figure 3 as well. Moreover, figures SI1c and d show the test with NAP9_T-0.60 against *S. aureus* and *E. coli*, respectively. In this case, it is possible to observe some colonies on the borders of the Petri in the test against *E. coli*. In fact, thyme essential oil at a concentration of 0.60 mg,oil/mg,film resulted having 91% of antimicrobial activity against *E. coli* (figure 3).

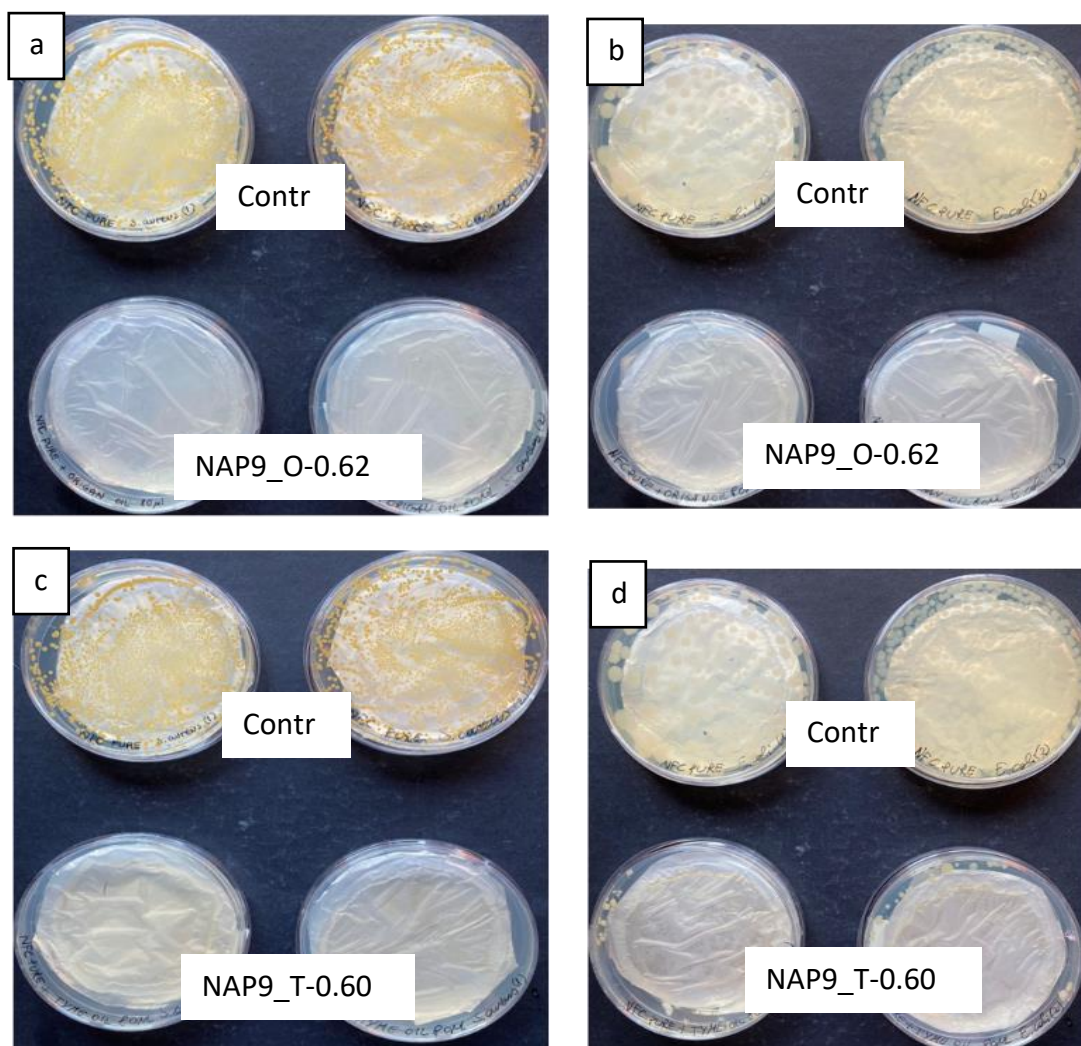


Figure SI1. Appearance of the Petri dishes after the test with (a,c) *S. aureus* and (b,d) *E. coli*. The figure reports the control and the nanocellulose with oregano (a,b) and thyme (c,d) essential oil.