Lactoferrin-Thymol Complex for Disinfection of Gram-Positive *S. aureus* and Gram-Negative *E. coli*

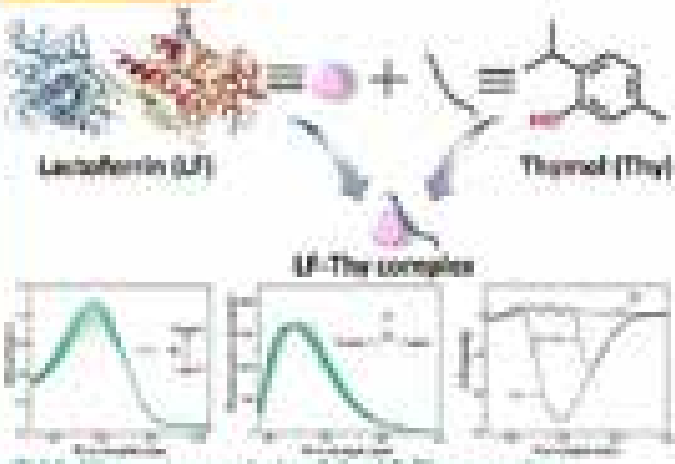
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Abstract

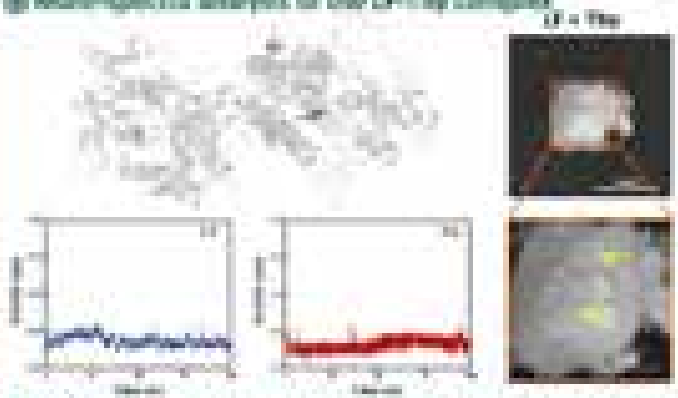
The emergence of superbugs with multidrug-resistance (MDR) to traditional antibiotics due to their excess accumulation in the environment has declared the oncoming post-antibiotic era. Meanwhile, Seeking all-nature derived antibacterial agents with effective disinfection function, high human safety as well as environment-friendly characteristics are highly required in the food industry. Herein, we report the lactoferrin-thymol (LF-Thy) complex as an effective killing agent against Gram-negative *Escherichia coli* (*E. coli*) and Gram-positive Staphylococcus aureus (*S. aureus*).



Materials

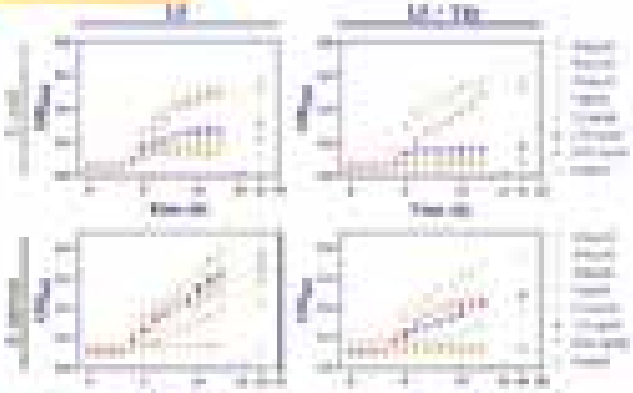


Multi-spectra analysis of the LF-Thy complex

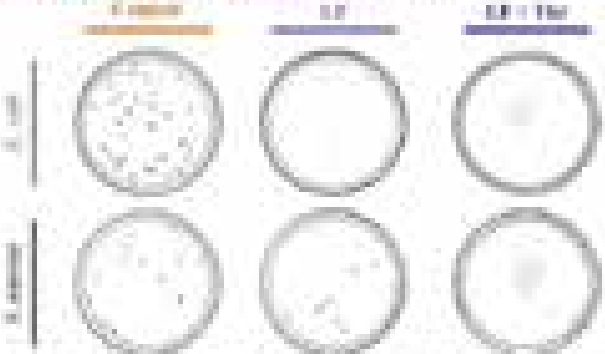


Molecular docking, molecular dynamics simulations and SEM image of the LF-Thy complex

Results



Growth curves of *E. coli* and *S. aureus* cultured at various concentrations of LF and LF-Thy.



From the photographs of the agar plates, it is known that *E. coli* and *S. aureus* treated with LF-Thy were significantly reduced, compared to LF.

Summary

This work contributes to the further understanding of the LF-Thy interactions and demonstrates the robust antimicrobial activity of the LF-Thy complex. The all-nature-derived LF-Thy complex provided a new idea for fighting bacterial infections and will hold great potential in the public health/food industry.

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