



Demonstration of the interactions between aromatic compound-loaded lipid nanocapsules and *Acinetobacter baumannii* bacterial membrane

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Titre	Demonstration of the interactions between aromatic compound-loaded lipid nanocapsules and <i>Acinetobacter baumannii</i> bacterial membrane
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Auteur	Montagu, Angélique [1], Joly-Guillou, Marie-Laure [2], Guillet, Catherine [3], Bejaud, Jérôme [4], Rossines, Elisabeth [5], Saulnier, Patrick [6]
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Résumé en anglais	<p><i>Acinetobacter baumannii</i> is an important nosocomial pathogen that is resistant to many commonly-used antibiotics. One strategy for treatment is the use of aromatic compounds (carvacrol, cinnamaldehyde) against <i>A. baumannii</i>. The aim of this study was to determine the interactions between bacteria and lipid nanocapsules (LNCs) over time based on the fluorescence of 3,3'-Dioctadecyloxycarbocyanine Perchlorate-LNCs (DiO-LNCs) and the properties of trypan blue to analyse the physicochemical mechanisms occurring at the level of the biological membrane. The results demonstrated the capacity of carvacrol-loaded LNCs to interact with and penetrate the bacterial membrane in comparison with cinnamaldehyde-loaded LNCs and unloaded LNCs. Modifications of carvacrol after substitution of hydroxyl functional groups by fatty acids demonstrated the crucial role of hydroxyl functions in antibacterial activity. Finally, after contact with the efflux pump inhibitor, carbonylcyanide-3-chlorophenyl hydrazine (CCCP), the results indicated the total synergistic antibacterial effect with Car-LNCs, showing that CCCP is associated with the action mechanism of carvacrol, especially at the level of the efflux pump mechanism.</p>
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Liens

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