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The study of curcumin interaction with micellar casein and lactic acid bacteria cell envelope

Aya N. Khanji, Florentin Michaux, Dominique Salameh, Toufic Rizk, Sylvie Banon, Jordane Jasniewski



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4 Aya N. Khanji,^{a, b} Florentin Michaux,^a Dominique Salameh^b, Toufic Rizk^b, Sylvie Banon^a, Jordane
5 Jasniewski^{a*}

6 *corresponding author

7 tel : +33 (0)3 72 74 40 92

8 fax : +33 (0)3 83 59 58 04

9 Postal address of corresponding author:

10 2, avenue de la Forêt de Haye, TSA 40602

11 54518 Vandœuvre-lès-Nancy, France

12 ^a Université de Lorraine, Laboratoire d'Ingénierie des Biomolécules (LIBio), 2 avenue de la Forêt de
13 Haye, TSA40602-F-54518 Vandœuvre-lès-Nancy, France.

14 ^b Université Saint-Joseph, Faculté des sciences, UR-TVA, Dept Chemistry, BP 11-514, Beirut 11072050,
15 Lebanon.

16 Abstract

17 Curcumin interaction with micellar caseins (MC), *Lactobacillus delbrueckii bulgaricus* (Lb) and
18 *Streptococcus thermophilus* (St) and its influence on the acid gelation were investigated.
19 Epifluorescence microscopy evidenced the adsorption of curcumin on bacteria surfaces and its
20 transfer from MC to bacteria. Fluorescence spectroscopy of curcumin and fluorescence quenching of
21 caseins variations in presence of bacteria and MC were evaluated. The interaction between curcumin
22 and St and Lb was confirmed due to the decrease of curcumin fluorescence intensity from 1.7 A.U to
23 1.20 A.U and to 1.40 A.U, respectively. The transfer of curcumin between MC and bacteria was
24 confirmed. The curcumin interacted more with St than with Lb envelope with a fluorescence
25 intensity decrease from 6.20 ± 0.02 A.U to 5.20 ± 0.08 A.U and to 4.60 ± 0.08 A.U, respectively. It also
26 showed that St was more hydrophobic than Lb bacterial envelope leading curcumin to interact more
27 with *Streptococcus* surface. Curcumin adsorption did not affect Lb and St growth nor its acidification
28 rate of milk. The acid gelation study led to a typical gel yoghurt-like formation. For the first time, it

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