Supporting information

Core-shell alginate@silica microparticles encapsulating probiotics

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Table SI1: Sizes of alginate before and after coating for organic and aqueous medias.

<table>
<thead>
<tr>
<th>SYSTEMS</th>
<th>Alginate (H2O)</th>
<th>Alginate (tris)</th>
<th>CwSorg</th>
<th>CtrisSorg</th>
<th>CwSaq</th>
<th>CtrisSaq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average sizes*</td>
<td>225 ± 15 µm</td>
<td>229 ± 14 µm</td>
<td>238 ± 20 µm</td>
<td>210 ± 18 µm</td>
<td>233 ± 11 µm</td>
<td>238 ± 19 µm</td>
</tr>
</tbody>
</table>

*Average on 300 beads for 3 individual experiments
**Figure SI1**: Additional SEM images of core shell microparticles prepared with various reaction conditions. A,B: C\textsubscript{w}S\textsubscript{org}; C,D: C\textsubscript{tris}S\textsubscript{org}; E,F,G,H: C\textsubscript{w}S\textsubscript{aq}; I,J: C\textsubscript{tris}S\textsubscript{aq}. On image G, one can observe the shell thickness and on image H, the grainy and porous structure of the silica shell.
**Figure S12**: FTIR-ATR spectra of alginate beads and of silica coated alginate beads confirming both the presence of alginate in the core-shell beads ($\nu_{\text{COO}^-} = 1410, 1612 \text{ cm}^{-1}$) and of silica ($\delta_{\text{Si-O}} 990-1100 \text{ cm}^{-1}$)

**Figure S13**: CLSM image of silica coated alginate bead free of LGG. The size and the shape of the beads are similar to the one containing bacterial cells
**Figure S14**: SEM and (insert) TEM micrographs of the coated alginate beads obtained in aqueous media in the absence of surfactants.
Figure S15: Confocal images of green, red and transmission channels for: A: C$_{\text{trisS}_{\text{org}}}$, B: C$_{\text{triS}_{\text{org}}}$ after 60h exposure to MRS, C: C$_{\text{trisS}_{\text{aq}}}$, D: C$_{\text{trisS}_{\text{aq}}}$ after 60h exposure to MRS.