Supporting material

# Calculations

Calculation of vitamin B6 concentration in 1 g W1/O/W2 emulsions when 1.5 wt% vitamin B6 was added to W1 of E1：

$C\_{0}=n/V=m/VM=(0.15 g×35\%×0.1)/(0.05 L×205.64)=0.51 mmol/L$ (S1)

Calculation of encapsulation efﬁciencies by centrifugation measurement:

Assume that the internal and external water phase osmotic pressure balance, the external water phase quality is equal to the initial addition amount. After centrifugation, 0.34 g of supernatant were determined by CV measurement.

 $c=x=(y-2.2)/68.7=(5.311\pm 0.07 μA-2.2)/68.7=0.045\pm 0.0010 mmol/L$ (S2)

$C\_{2}=\frac{0.045\pm 0.0010×0.65}{0.34 g}=0.086\pm 0.0019 mmol/L$ (S3)

$EE(\%)=(C\_{0}-C\_{2})/C\_{0} ×100\%=(0.51-0.086\pm 0.0019)/0.51×100\%=88.23\pm 0.20\%$ (S4)

Table S1 Current values and the concentrations of vitamin B6 (n=3)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Electrolyte | Regression equations | Day 0 |  | Day 14 |
| Current/(μA) | Concentration/(mmol/L) | Current/(μA) | Concentration/(mmol/L) |
| PBS-ME | *y*= 40.8 *x*－1.4\* | 1.33± 0.13 | 0.067± 0.003 |  | 4.38± 0.09 | 0.142± 0.002 |
| PBS-ME-EtOH | *y* = 52.9 *x* + 0.7 | 27.45± 0.24 | 0.506± 0.005 | 27.46± 0.32 | 0.510± 0.003 |
| Original Concentration/(mmol/L) | 0.51 |
| EE/(%) | 86.9 ± 0.59 | 72.2 ± 0.43 |

\* *y* represents for peak currents i/(μA), and *x* represents for the concentration of vitamin B6 *c*/(mmol/L)

Table S2 Current values and the concentrations of vitamin B6 (n=3).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Electrolyte | Regression equations | Day 0 |  | Day 14 |
| Current/(μA) | Concentration/(mmol/L) |  | Current/(μA) | Concentration/ (mmol/L) |
| PBS | *y= 68.7 x+2.2\** | 5.31 ± 0.07 | 0.045 ± 0.001 |  | 7.41 ± 0.34 | 0.045 ± 0.001 |
|  *c*2 | 0.086 ± 0.002 | 0.15 ± 0.01 |
| Original concentration /(mmol/L) | 0.51  |
| EE/(%) | 88.2 ± 0.20 | 71.5 ± 0.78 |

\* *y* represents for peak currents i/(μA), and *x* represents for the concentration of vitamin B6 *c*/(mmol/L)

Fig.S1 The voltammograms of vitamin B6 in W2 of the W1/O/W2 emulsions at beginning of the formation (a) and after 14 days under room temperature (b) by direct determination. 0.05 mmol/L phosphate buffer solution (PBS), pH 6.0, scan rate of 100 mV/s.



Fig.S2 The voltammograms of vitamin B6 in W2 of the W1/O/W2 emulsions on formation (a) and after 14 days under room temperature (b) by centrifugation method. 0.05mmol/L phosphate buffer solution (PBS), pH 6.0, scan rate of 100 mV/s.

