**Supplementary Material**

Table S1. Experimental factorial design (2²) of the essential oil of *E. staigeriana* sodium alginate emulsions and their stability parameters.

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| --- | --- | --- | --- | --- | --- |
|  | **Factor A** | **Factor B** | **Interaction Factor** | **Particle Size** | **Zeta potential** |
| E1 | +1 | -1 | -1 | 223.33 ± 4.03 | -31.53±3.42 |
| E2 | -1 | -1 | +1 | 296.33 ± 17.82 | -47.87±1.50 |
| E3 | +1 | +1 | +1 | 280.50 ± 9.51 | -35.87±3.26 |
| E4 | -1 | +1 | -1 | 334.63 ± 38.00 | -32.27±1.79 |

Factor A: Tween/EsEO ratio: Low Level (-1): 1:2.5 and High Level (+1): 1:2;

Factor B: ALG/EsEO ratio: Low Level (-1): 2:1 and High Level (+1) 3:1.