



In Vitro Evaluation of Preabsorptive Events of Dispersed Supramolecular Aggregates by Dynamic Light Scattering. Oral Multivitamins as a Model Case.

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SUMMARY. In order to develop an approach to evaluate the preabsorptive behavior of supramolecular aggregate carriers, three commercial oral formulations of a mixture of lipophilic and hydrophilic vitamins dispersed in water-glycerin-polysorbate-80 (PS-80) vehicle were subjected to dynamic light scattering and electrokinetic determinations. They exhibited diffusion coefficients ranging from $4.46 \cdot 10^{-9}$ to $3.22 \cdot 10^{-8}$ cm^2/s . To mimic *in vivo* environment the formulations were progressively diluted with water and simulated gastric and intestinal fluids until a ratio 1:10. Hydrodynamic diameters (d_H) at 37 °C and electrokinetic potentials of each formulation remained almost unchanged in the three assayed conditions. However, the average d_H were 1.00, 1.36 and 1.63 times higher than a reference dispersion of PS-80 revealing significant differences among formulations. Concentration of PS-80 in diluted samples is about 10^3 times above its critical micellar concentration. Therefore, loaded core/shell micelles appears to be robust drug carriers that will interact with the gastrointestinal membranes upon administration. The observed differences in size and/or shape would be related to the biopharmaceutical performance of multisource products. Besides, the developed approach could be used in developing and control stages of such pharmaceutical systems.

KEY WORDS: Dynamic light scattering, *In vitro* test, Oral multivitamins, Preabsorptive events, Supramolecular aggregates.

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