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Stability issue of nanosuspensions in drug delivery

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ABSTRACT:

Nanosuspensions are nanosized colloidal dispersion systems stabilized by surfactants, polymers or a combination of both. Due to nanosizing results in the creation of new interfaces and in a positive Gibbs free energy change, nanosuspension is a thermodynamically unstable system with tendency of agglomeration or crystal growth. Despite the nanosuspensions technology has been extensively investigated, stability issue is still the limitation and shortcoming for its application on pharmaceutical industrial. Furthermore, the knowledge on empirical relationship between the stabilizer efficacy and stability of the nanosuspension is relatively deficiency. This review especially focused on the stability issue of nanosuspensions in drug delivery to retrieve the state art of the nanosuspensions. Therefore, the main contents of present review including the presentation of nanosuspensions instable, the method and guideline for section and optimizing stabilizers, the approaches for enhancing stability, as well as the other influencing factors on the stability of the prepared nanosuspensions. For a given drug candidate having a set of properties, this article could be used as a reference in making educated choice of stabilizer and in optimizing operation parameters for nanosuspensions formulation, rather than a trial and error approach that is being practiced currently.

Keywords: Nanosuspensions; Stability; Stabilizers; Aggregation; Crystalline transformation

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