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Formulation and characterization of a pharmaceutical Pickering emulsion

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Emulsions play an important role in various fields such as in pharmaceuticals, cosmetics, food and drilling muds. In fact, the production and use of stable emulsions have been extensively examined in relation to the pharmaceutical and environmental applications, food industry and petroleum production. Understanding, the required conditions for the formation of physically stable emulsions is an important area of research. Bentonite is considered as an environment friendly natural raw material and has already been used in several Pickering emulsions stability studies. It was included in the FDA Inactive Ingredients Database (oral capsules, tablets and suspensions, topical suspensions, controlled release transdermal films and vaginal suppositories) as well as in non-parenteral medicines licensed in the UK. Algerian bentonite is used for the first time as a Pickering emulsion stabilizing agent. In order to find out the emulsion optimal composition from the stability standpoint, a response surface methodology (RSM) was used with the help of Modde 6 software. For a better physical stability, methodology of experimental design is adopted with the Modde software. The purpose of the study was also to minimize the surfactant content in the formulation of pharmaceutical and cosmetic emulsions. Results show that 7% of bentonite and low concentration levels of cationic surfactant (CTAB, 0.02%) and salt (NaCl, 0.015 M) provides a satisfactory physical stability after 22 months of ageing with emulsion mean particle size of the order of 20 μm. The rheological properties of the optimal formulation were investigated in order to assess its physical stability. Viscoelasticity and flow curves show that G' modulus is greater than G", which indicates that the emulsion behaves like a viscoelastic fluid with a rigid structure showing a high viscosity (500 Pa.s) at the zero state and a low viscosity (0.05 Pa.s) at the infinite state.`

Biography

Saida Touzouirt is working in Mouloud Mammeri University of Tizi-Ouzou, Algeria.

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