Development of poly(butyl cyanoacrylate) colloids as carriers for the antifungal drug econazole

Georgi Yordanov

University of Sofia, Faculty of Chemistry, 1 James Bourchier Blvd., 1164 Sofia, Bulgaria
e-mail: g.g.yordanov@gmail.com

Here, we report the preparation of econazole-loaded poly(butyl cyanoacrylate) (PBCA) colloidal particles by using different preparation methods and colloidal stabilizers. The econazole is an antifungal drug used for local and systemic treatment of fungal infections. On the other hand, the poly(butyl cyanoacrylate) colloids are well-known as potential drug carriers. Here, we describe the loading of econazole in PBCA particles in order to develop a novel colloidal formulation of the drug and characterized the obtained particles for morphology, size distribution, drug content, etc. The particles were prepared by classical emulsion polymerization, as well as by the so-called nanoprecipitation approach [1], using different colloidal stabilizers.

A representative SEM image of econazole-loaded PBCA colloidal particles prepared by nanoprecipitation in the presence of dextran 40 as a colloidal stabilizer

The obtained formulations contained econazole-loaded particles of spherical shape and size below 500 nm (see the SEM image). Both methods (nanoprecipitation and emulsion polymerization) allowed the preparation of colloids stabilized by various non-ionic surfactants. The drug loading efficiencies were high enough (above 50%) for further biomedical tests of the obtained formulations.