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## Pluronic® F-68 Enhances the Nanoparticle-Cell Interaction

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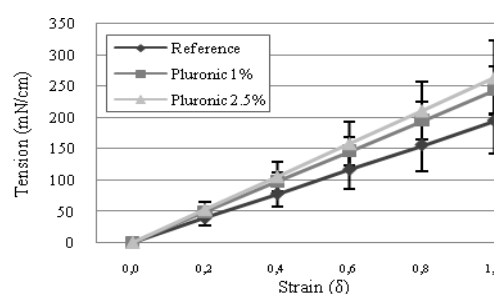
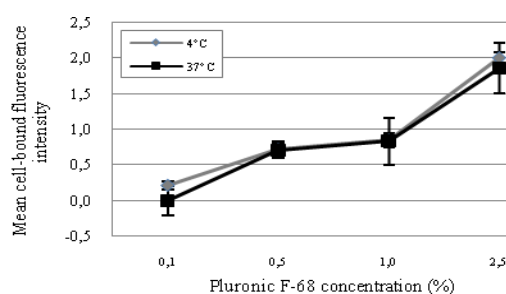
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Nowadays, the various surfactants find wide application in pharmaceutical industry. The nanoparticle preparation process by emulsion techniques essentially requires a surfactant, most commonly Pluronic® F-68 [1]. This non-ionic tenside influences cell physiology and was tested in clinical trial for the treatment of sickle cell disease [2] and myocardial infarction [3]. Out of these reasons, even residual tenside in nanoparticle preparations might influence the cells as well as their interaction with the colloidal carriers. At this, Caco-2 single cells were incubated with fluorescent polystyrene nanoparticles, in presence of increasing amounts of Pluronic® F-68 and cell-associated nanoparticles were detected by flow cytometry. Independent from incubation temperature, the cell-associated fraction of nanoparticles concurrently increased with the tenside concentration. Ongoing from micropipette aspiration experiments this effect could be attributed to an increase of membrane stiffness of Caco-2 cells in presence of Pluronic® F-68. Furthermore, the toxicity assay revealed that viability of the cells remained unaffected at any concentration of Pluronic® F-68.



All in all, the non-ionic surfactant Pluronic® F-68 not only promises as a therapeutic agent but also as a non-toxic enhancer of nanoparticle-cell interaction. That way, the challenge (presently existing limit) of reaching therapeutic levels in drug therapy with nanoparticles might be overcome.

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