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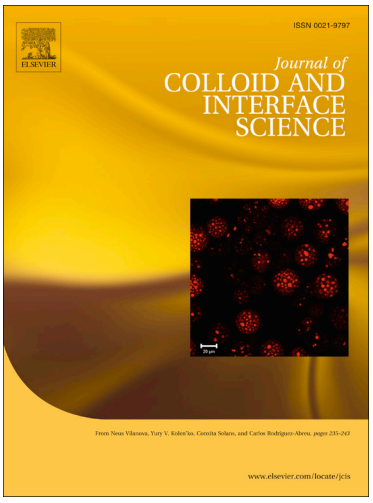

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Novel microemulsion-based gels for topical delivery of indomethacin: formulation, physicochemical properties and *in vitro* drug release studies

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Abstract

Hypothesis

Microemulsion-based semisolid systems may be considered as an interesting alternative to the traditional dosage forms applied in topical drug delivery. Mechanical properties of topical products are important both in terms of application and dosage form effectiveness. In this study we designed and evaluated novel microemulsion-based gels with indomethacin and analyzed the factors affecting their mechanical characteristics and drug release.

Experiments

The impact of the microemulsion composition on the extent of isotropic region was investigated with the use of pseudoternary phase diagrams. Selected microemulsions were analyzed in terms of electrical conductivity and surface tension in order to determine the microemulsion type. Microemulsions were transformed into polymer-based gels and subjected to rheological and textural studies. Finally, the indomethacin release from the analyzed gels was studied and compared to commercially available product.

Findings

The extent of isotropic domain in pseudoternary phase diagrams seems to be dependent on the polarity of the oil phase. The surface tension and conductivity monitored as a function of water content in microemulsion systems revealed possible structural transformations from w/o through bicontinuous systems into o/w. The mechanical properties of semisolid microemulsion-based systems depended on the composition of surface active agents and the