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Greeting

On behalf of the Organizing Committee I am pleased to welcome you among the participants of the 12th Central European Symposium on Pharmaceutical Technology and Regulatory Affairs held in Hungary second time.

The conference series started in 1995 under the patronage of EUFEPS and the goal of the founders was to give a platform for colleagues from the Central European region working on the field of pharmaceutical technology in the industry, universities or academic institutes. In the past conferences the original goals were extended, and the conference topics covered also pharmaceutical biotechnology or as in this conference, the regulatory aspects of drug development and manufacturing.

This scientific forum traditionally gathers colleagues from all over Europe but especially from the Central- and Eastern-European region and serves as a strong and stable background for permanent dialogue between pharmacists and other scientists working in the fields of pharmaceutical R&D or manufacturing.

The conference provides the possibility for the participants to present their results, discuss the new developments and the future directions of the pharmaceutical technology and manufacturing.

It offers a good opportunity to promote scientific achievements for talented young pharmacists, initiate common research projects, and fostering the application of the results of new approaches for the accelerated development and introduction of safer and more effective medicines.

I am pleased that we have 250 colleagues registered for this symposium. The program contains 10 plenary and keynote lectures, 25 verbal and 152 poster presentations.

Looking forward to seeing you in Szeged and having a fruitful and vivid conference!

Assoc. Prof. Ildiko Csoka
President of the 12th Central European Symposium
on Pharmaceutical Technology and Regulatory Affairs

Acta Pharmaceutica Hungarica – CESPT Edition – Committees 87. 88-89 2018.

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nounced thixotropy. Although levan is known for self-assembling in compact globules, these structures managed to retain sufficient flexibility and successfully complement both the matrix-type (in case of anionic mixed emulsifier) and lamellar liquid crystalline-type colloidal structure (generated by the non-ionic emulsifier). Apart from comparative analysis of the flow curves, fine time-dependant changes in hysteresis values successfully revealed a deeper impact of levan addition.

CONSLUSION: Increase in levan concentrations does not result in linear changes of key rheological parameters, which implies that even the lower amounts may successfully tailor pharmaceutical formulations.

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P6/2

Halloysite-functionalized chitosan films for local delivery of antibiotics

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INTRODUCTION: Polymeric films as drug carriers should exhibit biocompatibility, sufficient drug loading, flexibility, stability, target residence time, and adequate drug dissolution rate. These functional properties could be improved by the addition of minerals, such as clays [1]. Among them, halloysite nanotubes (HNTs) are particularly attractive, owing to their biocompatibility, specific nanotubular structure and excellent dispersibility in solutions of polymers. The objective of this work was to investigate the influence of HNTs on chitosan film properties relevant for local delivery of antibiotics.

MATERIALS AND METHODS: Chitosan and chitosan-HNTs composite films were prepared by casting and solvent evaporation technique. Briefly, required amount of HNTs was dispersed in 1.5% (w/w) chitosan (MW 253.7 ± 7.8 kDa; deacetylation degree >85%) and 0.5% (w/w) tetracycline hydrochloride (TH) solution (chitosan/HNTs ratio = 3/1). The dispersion was casted into acrylic molds and dried at room temperature. Obtained films were cut into 25 x 25 mm pieces, subjected to mass and thickness determination, FT-IR, mechanical, and thermal analysis, and in vitro drug release studies. For comparison, chitosan films were prepared by following the same procedure without addition of HNTs.

RESULTS AND DISCUSSION: TH-loaded composite films were 89.12 ± 6.83 μm thick while their mass was 76.70 ± 3.29 mg. The addition of HNTs caused decrease of elongation at break from 60.94 ± 5.05 % to 21.65 ± 2.65 % and increase of mechanical resistance, that was tensile strength from 24.66 ± 2.56 MPa to 134.8 ± 13.21 MPa and elastic modulus from 40.45 ± 2.16 MPa to 633.79 ± 128.37 MPa, as a result of interactions between HNTs and chitosan confirmed by FT-IR analysis. DTA and TG studies revealed increased thermal stability of the composite films in comparison to the chitosan films. The composite films exhibited more sustained release than chitosan films, with t50% < 5,5 h (t90% > 8 h) and t50% < 2 h (t90% > 8 h) in phosphate buffers 5.8 and 7.4, respectively. The observed influence of pH on TH release from the composite films could be ascribed to pH-sensitive interaction between HNTs and chitosan.

CONSLUSION: Halloysite-functionalized chitosan films demonstrated better potential for local delivery of antibiotics in comparison to chitosan films owing to the improved thermal stability, mechanical and drug-release properties.

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P6/3

Investigation of DPPH radical scavenging ability of different antioxidants incorporated into fast inverted oil-in-water emulsion

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INTRODUCTION: The SWOP (SWitch-Oil-Phase) emulsions are oil-in-water emulsions which are characterized by fast inversion into water-in-oil emulsions during application on the skin and consequent formation of a water-resistance layer over the skin [1]. Flavonoids quercetin (QUE) and dihydroquercetin (DHQ), as well as β-carotene (βC) are used in cosmetics as antioxidants. Additionally, these compounds show protective effects against ultraviolet radiation. Therefore, their incorporation into SWOP emulsion could result in a new waterproof sun protection product. The aim of this study was to prepare SWOP emulsion with 0.5% QUE (SQUE), 0.5% DHQ (SDHQ) and with combination of 0.5% DHQ and 0.2% βC (SDHQβC), and to evaluate DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging ability of incorporated antioxidants in comparison to the pure compounds.

MATERIALS AND METHODS: For this purpose, in vitro colorimetric DPPH assay was used [2, 3]. Results were expressed as the concentrations of antioxidants that scavenged 50% DPPH radicals, and analysed by one-way ANOVA, followed by Tukey's post hoc test (p=0.05).

RESULTS: QUE and DHQ incorporated into SWOP emulsion exhibited strong anti-DPPH activity, without significant statistical difference compared to the pure compounds. The SC50 values of incorporated and pure QUE were 3.48±0.10 and 3.37±0.03 μg/mL, respectively. The SC50 values of DHQ incorporated in SDHQ and SDHQβC, and of pure DHQ were 5.36±0.27, 5.06±0.14 and 5.02±0.10 μg/mL, respectively. Neither incorporated nor pure βC showed anti-DPPH activity at tested concentrations (0.40-8.00 μg/mL). The SC50 values of tested SWOP emulsions, i.e. SQUE, SDHQ and SDHQßC were 0.70±0.02, 1.07±0.05, 1.01±0.03 mg/mL, respectively.

CONCLUSION: QUE and DHQ incorporated into SWOP emulsion retain their strong anti-DPPH activity, i.e. investigated SWOP emulsion is a suitable vehicle/base for the tested flavonoids. On the other hand, although known for its antioxidant activity, βC showed no anti-DPPH activity, which is in agreement with findings of some other authors [4]. Therefore, DPPH assay is not suitable for the testing of antioxidant activity of βC incorporated into SWOP emulsion.

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P6/4

Adapalene loaded alkyl polyglucoside based topical microemulsions – in vitro drug release

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INTRODUCTION: In order to enhance dermal availability of the anti-acne drug adapalene (ADA) into target areas, microemulsion (ME) formulation appeared to be a promising tool [1]. The aim of this study was to evaluate the composition influence of previously formulated MEs [2, 3] based on naturally occurring nonionic surfactants - alkyl polyglucosides, on in vitro release of ADA.

MATERIALS AND METHODS: For the preparation of MEs, oil (propylene glycol monocaprylate, glycerol monocaprylate or glycerol monocaprylocaprate) was added to the mixture of surfactant (decyl glucoside or caprylyl/capryl glucoside) and cosurfactant (propylene glycol) and mixed for 15 min. Then, proper amount of water was added and mixed for another 15 min. ADA (0.1% w/w) was dissolved in previously prepared MEs. pH, conductivity and viscosity of all MEs were measured. The microstructure of the selected vehicles was assessed by using electrical conductivity measurements and differential scanning calorimetry in cooling mode. In vitro drug release studies were conducted using Franz Diffusion cells.

RESULTS: All MEs were transparent, low-viscous (26.81-42.18 mPa*s) colorless liquids. In order to be dermatologically acceptable, measured pH values (above 8) had to be adjusted. According to the electrical conductivity and DSC measurements, bicontinuous microstructure was assigned to each ME. In vitro drug release profiles exhibited slow release rates during the first 1-2 hours and the last 4 hours. The type of surfactant seemed to play an important role, since ADA release from ME based on caprylyl/capryl glucoside was lower than from the sample based on decyl glucoside.