

STUDIJA MEZOMORFNOG PONAŠANJA ŠEĆERNIH EMULGATORA U STABILIZACIJI VODENIH I NEVODENIH EMULZIONIH NOSAČA

S. Savić¹, A. Kovačević¹, S. Tamburić², D. Krajišnik¹,
J. Milić¹, G. Vuleta¹

¹Institut za farmaceutsku tehnologiju i kozmetologiju, Farmaceutski
fakultet, Beograd, Srbija

²Cosmetic Science, London College of Fashion, University of Arts,
London, UK

Cilj ovog rada bio je da se ispita mezomorfni karakter interakcije dva šećerna emulgatora (cetearil glukozid&cetearil alkohol, Montanov™ 68 PHA (M68) i kokoglukozid&cetearil alkohol, Montanov™ 82 (M82)), upotrebljenih u koncentraciji 7% (m/m), u vodenim i anhidrovanim (sa glicerolom) emulzijama sa Mygliol-om® 812 kao uljanom fazom (u koncentraciji 20%). Vodeni i nevodeni emulzioni sistemi mogu biti potencijalni nosači slabo rastvornih lekova za primenu na kožu. Koloidna struktura sistema okarakterisana je primenom polarizacione mikroskopije, kontinualne i oscilatorne reologije, teksturalne analize i merenjem provodljivosti. Sigurnosni profil (bezbednost primene) i potencijal emulzionih nosača da modifikuju barijerna svojstva kože procenjeni su *in vivo*, korišćenjem 24 h-eksperimentalnog dizajna, pod okluzijom. Mereni parametri bili su: eritema indeks, vlažnost kože i transepidermalni gubitak vlage (TEWL).

I vodeni i nevodeni sistemi stabilizovani sa M68 pokazuju anizotropiju karakterističnu za lamelarne mezofaze. Kod M82 uzoraka anizotropija se uočava jedino kod anhidrovane emulzije, što može da ukaže na postojanje kubne faze tečnih kristala kod vodenih emulzija.

Vrednosti napona popuštanja, maksimalnog prividnog viskoziteta, elastičnog i viskoznog modula kod vodenih ternarnih sistema sa M68 bile su više od onih kod odgovarajućih uzoraka sa M82, što može da ukaže na predominantnost lamelarne gel kristalne faze kod emulzija na bazi M68. Sličan nalaz dobijen je i kod anhidrovanih emulzija, s tim da odnos elastičnog i viskoznog modula kod M82 sistema ukazuje na moguće prisustvo kubne faze tečnih kristala. Teksturalna analiza pokazuje korelaciju između pozitivnog i negativnog pika i elastičnog modula u obe emulzije sa M68.

U pogledu hidratacije kože anhidrovani uzorak M68 pokazuje najveći vlažeći potencijal u tretmanu normalne kože, dok oba anhidrovana uzorka (M68 i M82) značajno umanjuju TEWL.

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STUDY ON SUGAR SURFACTANTS MESOMORPHIC BEHAVIOUR IN HYDROUS AND ANHYDROUS EMULSION VEHICLES STABILIZATION

S. Savić¹, A. Kovačević¹, S. Tamburić², D. Krajišnik¹, J. Milić¹, G. Vuleta¹

¹Institute of Pharmaceutical Technology and Cosmetology, Faculty of Pharmacy, Belgrade, Serbia

²Cosmetic Science, London College of Fashion, University of Arts, London, UK

The study was focused to examine the mesomorphic character of interaction between two sugar emulsifiers (cetearyl glucoside&cetearyl alcohol and coco glucoside&cetearyl alcohol, MontanovTM 68 PHA and MontanovTM 82 (7 % (w/w)) in hydrous and anhydrous (with glycerol) emulsions with Mygliol[®] 812 (20 %), as the potential vehicles of poorly soluble drugs intended for a topical usage. The polarized microscopy, continual and oscillatory rheology, texture analysis and conductivity measurements were used in the colloidal structure characterisation. The safety profile as well as the emulsion vehicles potential in modifying skin barrier properties were evaluated *in vivo*, using 24h-experimental design under occlusion. The skin parameters followed were: skin erythema index, SC hydration and transepidermal water loss (TEWL).

The anisotropy typical for lamellar mesophase was revealed in hydrous and anhydrous systems stabilized with M68. The M82 samples exhibited anisotropy only in the case of anhydrous emulsion, pointing at the presence of cubic liquid crystalline phase in the hydrous emulsions. The hydrous systems (M68) have shown the higher values of yield stress, maximal apparent viscosity, storage and loss moduli in comparison to M82 systems, implying at predominance of lamellar gel crystalline structure in M68 emulsions. Similar finding was obtained with anhydrous emulsions, whereby the ratio between storage and loss modulus in M82 systems indicate the plausible presence of cubic liquid crystals phase. The texture analysis demonstrated a correlation between positive and negative peaks and storage modulus in both emulsions with M68.

Regarding to the skin hydration, the anhydrous sample M68 had the best moisturizing potential in the treatment of normal skin, whereas both anhydrous samples (M68 and M82) significantly reduced TEWL.