BIOCOMPATIBLE OIL IN WATER MICROEMULSIONS WITH HYALURONIC ACID AND SALICYLIC ACID AND METHOD FOR OBTAINING THEREOF

OSIM Patent Application No. A/00179 – 01.04.2020

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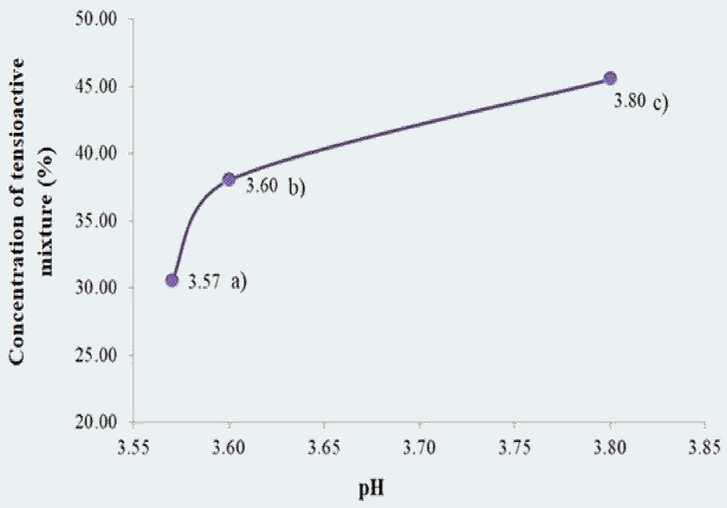
THE FIELD OF THE INVENTION

- The invention refers to **biocompatible** oil in water microemulsions with hyaluronic acid and salicylic acid, designed for topical application in **dermatologic therapy of acne** and a method for obtaining thereof.

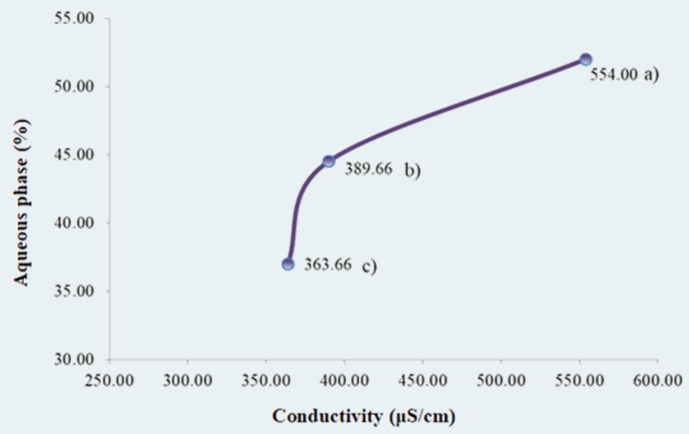
DESCRIPTION

- The method used to prepare oil in water microemulsions, according to the invention, consists in: lecithin 0.5% prepared as aqueous suspension is mixed with Tween 80 20...30% and propylene glycol 10...15% thus generating a complex surface tension modulator with solubilization function for salicylic acid 0.5%. The resulted mixture will be integrated in a solution formed with hyaluronic acid 1% and distilled water. The vegetable oil phase 1% composed of oat oil 0.5% and pomegranate oil 0.5% will be added drop by drop using oil titration method, under magnetic stirring. Finally, the obtained systems have a clear aspect, with fluid structure. After a deposition period at 4ºC the microemulsions were physico-chemically characterized by: pH, conductivity, refractive index and rheological behaviour.

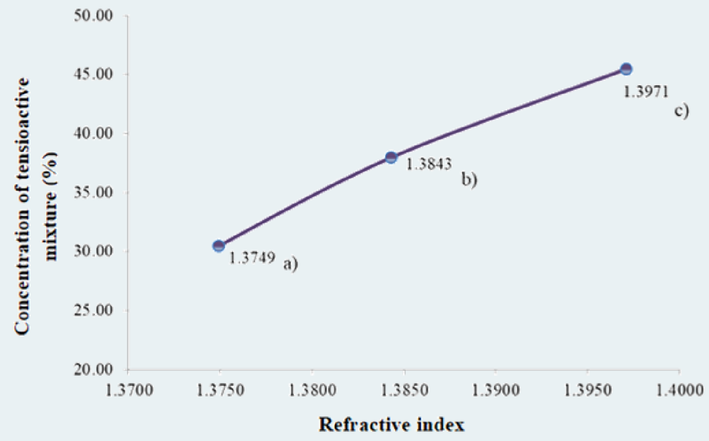
CHARACTERIZATION



pH values for the invented microemulsions, coded MEAS1, MEAS 2 and MEAS 3, as a function of the selected tensioactive mixture



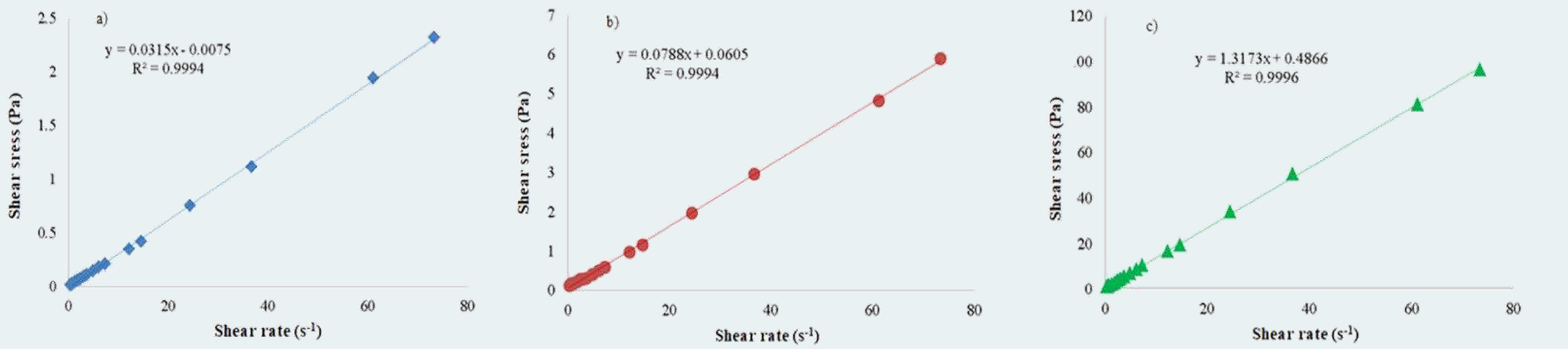
Conductivity values (µS/cm) for the invented microemulsions as a function of the aqueous phase content, defining the oil in water type of microemulsions



Values of refractive index expressed as a function of the tensioactive mixture content for the invented microemulsions, proving the isotropic character

Mathematical modeling of the rheological profiles for the invented microemulsions and the corresponding viscosity (cP)

Formulation	Straight line equation	Determination coefficient	Viscosity (cP)
MEAS 1	y = 0.0315 x – 0.0075	0.9994	31.5
MEAS 2	y = 0.0788 x + 0.0605	0.9994	78.8
MEAS 3	y = 1.3173 x + 0.4866	0.9996	1317.3



Rheological profiles for the invented microemulsions MEAS 1 (a), MEAS 2 (b) and MEAS 3 (c), expressed as shear stress versus shear rate, defining the linear character according to Newton's law

a) b) c)

ADVANTAGES

The advantages residing from the application of the invention are the following:

- The topical use of biocompatible oil in water microemulsions which (i) may include an antiacne active, namely salicylic acid 0.5% by integrating a surface tension modulator system with a double function: solubilization capacity and diffusion promoter through stratum corneum;
- In the same manner, minimizing the adverse reactions of salicylic acid like erythema or dryness by integrating (ii) hyaluronic acid as a biopolymer with hydrating, protective and resurfacing properties;
- Hyaluronic acid acts as a viscosity promoter due to hydrogen bonds formed with water molecules, resulting thus a structural network which enhance the sensorial properties of the final products;
- The biocompatibility of surface tension mixture is defined by the (iii) association of Tween 80 as a non-ionic surfactant with lecithin as a natural zwitterionic surfactant in combination with propylene glycol as a cosurfactant in a minimal concentration, under 70 %.
- Based on the described composition, microemulsion systems with a high biocompatibility will result, using a simple and rapid manufacturing method without energy consumption.

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