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The use of Tapioca starch in cosmetic emulsions

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PURPOSE OF THE ABSTRACT

The use of vegetal products in emulsion formulations are a new trend in cosmetic market (1). In this context, it is inserted the use of biopolymers as tapioca starch. This starch is provided by manioc roots (*Manihot esculenta* Crantz) that are naturally founded in Brazil (2). It is a biodegradable, non-toxic, renewable product very interesting for cosmetic and pharmaceutical, among other possible applications (3). Emulgels are interesting for topic formulations because they are a mix of both emulsion and gel properties that can constitute a release controlled system, enhancing the permeation of actives on the skin and increasing water retention (4). The aim of this work was to develop emulgels systems using tapioca starch as a vegetal biopolymer associated with sesame oil, which presents antioxidant and healing properties. The emulsion were prepared by the Emulsion Phase Inversion methodology containing Sesame oil as the oil phase, sorbitan oleate, PEG (30 or 54) castor oil as emulsifiers and the aqueous phase. Tapioca starch gel was added to the emulsion in two different ways: in the first way a hydrogel of tapioca starch was added as aqueous phase of emulsion; in a second way, the starch was added after the emulsion was formed and, in this way, the emulgel was heated until the respective starch's gelification point. Also, different pairs of emulsifiers were used for both ways of formulation resulting in four emulsions in total. They were submitted to macroscopic, microscopic analysis and to preliminary and accelerated stability tests. Emulgels were characterized by rheological and X-ray diffraction. The formulations showed the presence of an anisotropic area under polarized microscopy, regardless the pairs of emulsifiers. The found rheological behavior is pseudoplastic with none or small thixotropic area. Tapioca starch provided the presence of lamellar phase at formulations that it's a good prediction to emulsion's stability and formulation's moisturizing effect. The emulgels has shown suitable pH values and a rheological behaviour for topic cosmetic applications.

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FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

tapioca starch | biopolymer | emulgels

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