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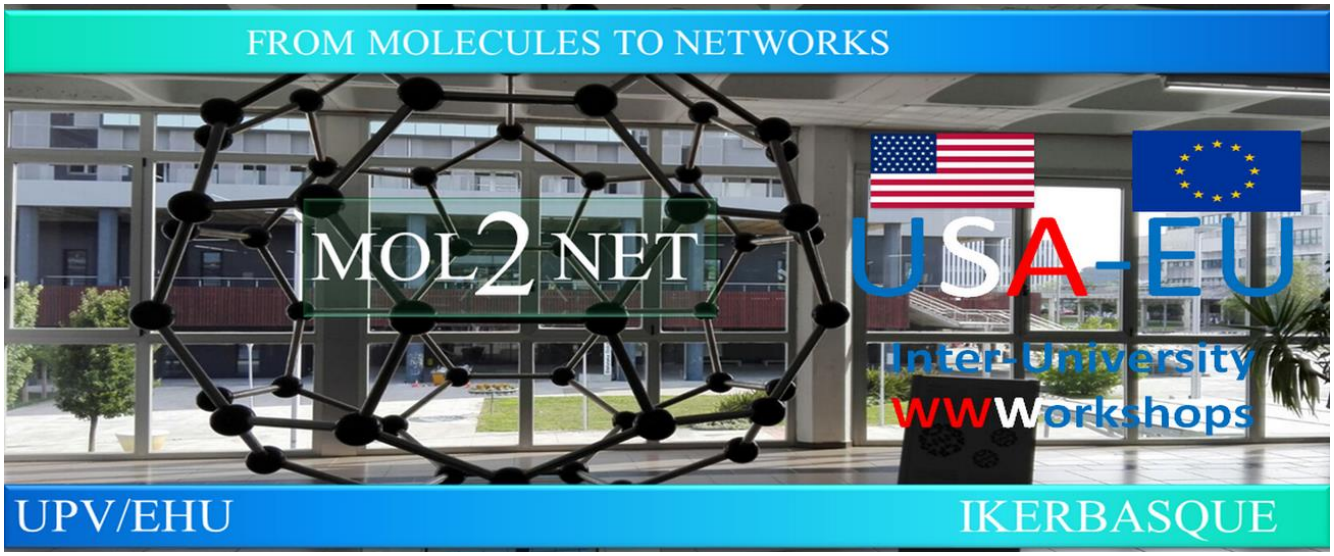

Evaluation of antioxidant activity of Rosehip oil (Rosa aff rubiginosa) present in cosmeutical for wound treatment

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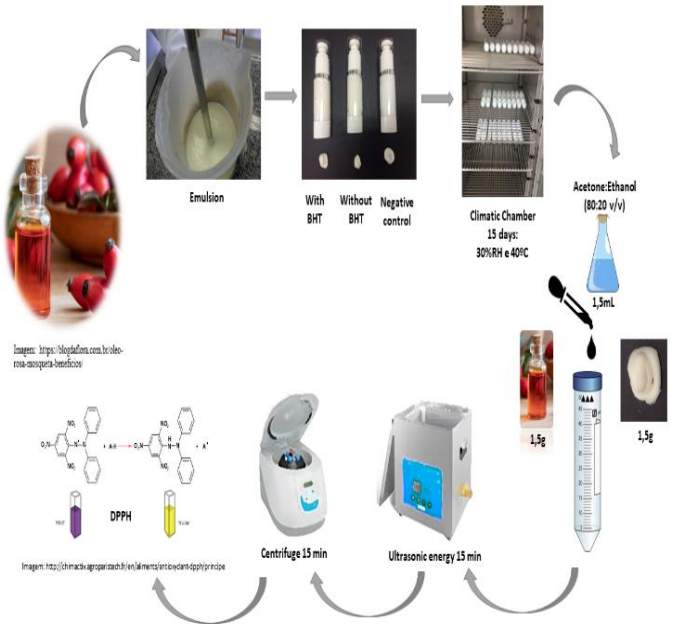
Graphical Abstract



Abstract.

Objective: *to evaluate the antioxidant activity of Rosehip (Rosa aff rubiginosa)* oil *incorporated in cosmeceutical formulations.* ***Method****: Two emulsions containing 30% rosehip oil were elaborated:* one with synthetic *antioxidant BHT (2,6-Di-tert-butyl-p-cresol)* and the other without *the antioxidant. For comparison, an emulsion was elaborated, without rosehip oil, but* containing *BHT. The emulsions, as well as an oil sample, were stored in* a climatic chamber for *15 days at 30% relative humidity and 40ºC temperature.* Both *emulsions and oil were submitted* to *the evaluation of antioxidant activity by the DPPH method* on the *day* of

	preparation and *15 days after. The extraction of antioxidant compounds was performed by the dissolution of 1.5g of sample in 1.5mL of acetone:ethanol solution (80:20 v/v) submitted to ultrasonic energy for 15min and centrifugation for 15 min. The supernatant was added to the radical DPPH and evaluated* in *spectrofotometer after 30min of sheltered rest of light.* ***Results:*** *The formulation maintained the antioxidant* activity of the *oil, protecting it from degradation under extreme conditions. There was also synergism of antioxidant activity with the addition of BHT.*

Introduction

. *Rosa aff rubiginosa*, popularly known as Rosa mosqueta is widely used in the cosmetic and food industry for its composition(1).

The fixed oil extracted by pressing cold from its seeds is rich in fatty acids essential to human nutrition, especially linoleic, oleic and linolenic acid, and trans-retinoic acid(2,3), in addition to flavonoids(3), vitamin C and carotenoids(2), effective substances in cutaneous treatment(4,5). For this reason, there has been growing interest in this application for cosmetics. However, due to its composition mainly grease, the oil has little stability due to the natural peroxidation process(6).

In view of the above, the present work aimed to evaluate the antioxidant activity of the oil incorporated in cosmeceutical formulations.

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Materials and Methods

. Three emulsions were evaluated, two containing 30% *of Rose aff rubiginosa* oil, without or with BHT (2,6-Di-tert-butyl-p-cresol) as synthetic antioxidant, and the third formulation elaborated without the presence of vegetable oil, but with BHT, called white cream for comparison purposes. All emulsions together with pure oil were stored in *airless vials* and kept in a climatic chamber for 15 days at 40 2±^{o}C and 30 5% RH ± (*cf.* Fig. 1).

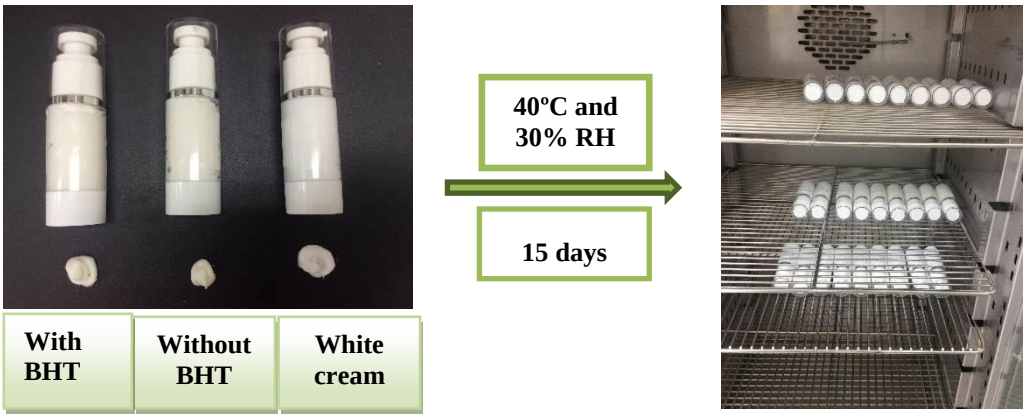

Figure 1 Emulsions developed with and without BHT, together with white cream (without Rosehip oil) packed in climatic chamber.

The samples newly prepared and exposed to climatic treatment for 15 days were submitted to antioxidant activity test by the DPPH method proposed by Kim et al (2002)(7). The extraction of antioxidant compounds was performed by dissolving 1.5g of the sample in 1.5mL of acetone:ethanol solution (80:20 v/v). The mixture was subjected to ultrasonic energy for 15min, followed by centrifugation 5000rpm/15min. 100µL of the supernatant was added to 2900µL of the 0.1mM radical in ethanol PA. After vortex agitation, they were kept at rest for 30 min protected from light. The initial optical density of the radical was evaluated in a spectrophotometer at 517nm absorbance. Antioxidant activity was expressed in Trolox equivalent (TEAC).

Results and Discussion

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Figure 2 shows the antioxidant action of vegetable oil, pure or incorporated in cosmeceutical formulas, as well as its synergistic effect in the presence of synthetic antioxidant.

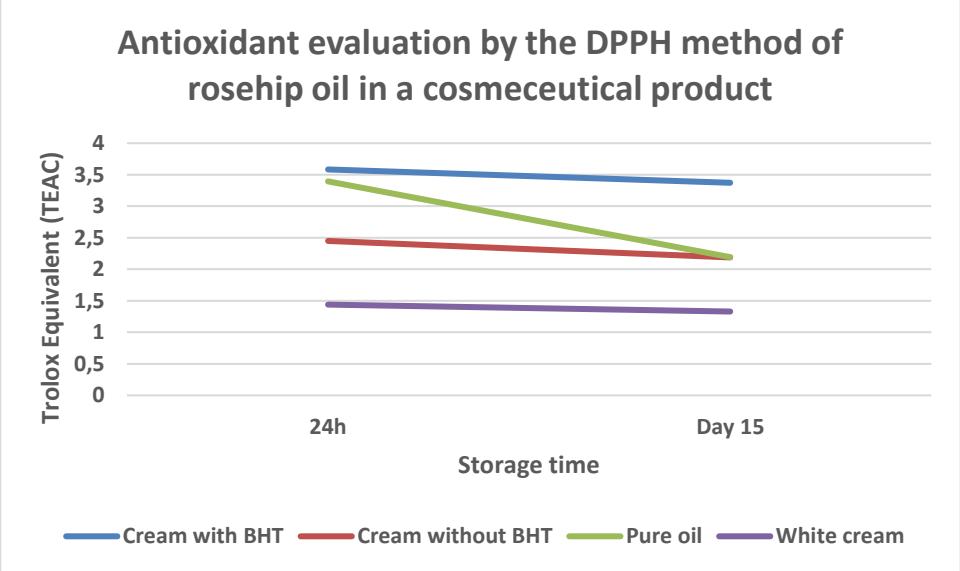

Figure 2 Comparison of antioxidant activity of oil incorporated in emulsion containing or not BHT and pure oil stored at 40ºC and 30±5% relative humidity. Source: the authors.

Conclusions

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It was possible to observe the maintenance of antioxidant action, even after treatment in extreme conditions. However, when inserted in the emulsion, the active oil compounds were protected from the climatic treatment employed. Another important observation concerns the initial lower action on emulsions compared to vegetable oil, which can be justified by thermal exposure during production process of the pharmaceutical form.

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