POLYPHENOLS EXTRACTION FROM BLACKTHORN BERRIES AND THEIR APPLICATION IN SUNSCREEN FORMULATION

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The cosmetic industry developed sunscreen products with plant extracts, the products being safe, widely accepted by consumers and also reducing the process of carcinogenesis. The aim of the current study was to obtain the extracts with the highest content of polyphenolic compounds from blackthorn berries and to incorporate these in a sunscreen formulation as a single UV filters.

The extracts of blackthorn berries (*Prunus spinosa*) were prepared by sonication and reflux and analyzed by UV-Vis spectrophotometry using Folin-Ciocâlteu and DPPH methods. The extracts with the highest content in polyphenols were introduced in sunscreen formulation and Mansur's method was used to determine the sun protection factor.

Using ultrasound extraction, in 10 min, the total polyphenols content of the blackthorn was between 1.60 and 2.52 mg GAE / g DW, depending on the tested experimental conditions. Following the analysis of blackthorn extracts, the antioxidant capacity was between 15.13 and 63.18 mM Trolox / g DW, while the sun protection factor values were between 1.40 and 2.62. Following the analysis of the extracts, the highest total content of polyphenols (4.01 mg GAE / g DW) and the highest antioxidant capacity (52.57 mM Trolox / g DW) using reflux, in 45 min.

The ultrasound assisted extraction were better than reflux extraction, the optimal extraction conditions being 40% ethanol, 67°C, and 10 min. The optimized extract was introduced into a cosmetic formulation, formulation that remained stable at the end of the stability study (120 min), preserving their photoprotective effect. These results demonstrated that the blackthorn extract can be used in cosmetic formulations.

Keywords: *cosmetic, plant extract, sun protection factor, ultrasound, reflux.*

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