



Mandelic and hyaluronic acids nanoemulsions in PVP, PEG and agar hydrogels

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Hydrogels are eclectic materials and increasingly find important applications in biomedical, agricultural, wastewater treatment, and electronic devices. In the biomedical and cosmetics areas, hydrogels are widely used and can be combined with nanoemulsions in order to enhance its effectiveness. In this research, hydrogels were prepared with mandelic and hyaluronic acids. The research aims to contribute to the cosmetic field by obtaining anti-aging cosmetic without the need of cosmetic preservatives. The hydrogels were composed of PVP 7%w, PEG 3%w and agar 1%w containing pseudoboehmite (PB) in the concentrations of 1%w, 3%w and 5%w with mandelic acid (MA), hyaluronic acid (HA) and palmarosa (PR) nanoemulsions. They were submitted to irradiation doses of 25 kGy. All nanoemulsions were characterized by acidity, density, optical microscopy, visual analysis and particle distribution and size. All hidrogels were characterized by isothermal dehydration with air entrainment and dehydration as a function of time. The results showed that the nanoemulsions formulations D, E and F, containing HA, presented levels similar to skin's pH, after 7 days. Samples B and E, containing 3%w PB, presented uniformity and good dispersion of the particles and sample F 5%w PB, containing 7%w PR, 2.1%w HA had the best results in particle size determination analysis. Isothermal dehydration levels didn't vary substantially according to the composition. In dehydration as a function of time analysis, samples hydrogels HIII (3%w PB, 7.0%w PR, 2.1%w MA) and HVI (5%w PB, 7.0%w PR, 2.1%w HA) had the best performance.