

Design and Characterization of Nanoparticulate Liquid Systems for Topical Ocular Delivery of Carvacrol †

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Abstract: Carvacrol (CAR) is a natural phenolic compound recognized for its antioxidant and neuroprotective properties. Although, it presents drawbacks such as its limited aqueous solubility, high volatility, and its rapid degradation. One possible strategy to overcome these drawbacks is to incorporate CAR into nanoparticulate liquid systems. The present work reports the synthesis and physicochemical characterization of the nanoparticulate systems obtained from the mixture of Phytantriol (PHY) and glycerol monooleate (GMO) in different proportions 25:75, 55:45, 70:30, respectively. These systems were characterized through particle size, polydispersity (PDI), potential Z, and pH. The releases of the nanoparticle systems loaded with CAR resulted in a sustained release of the compound for 24 hours, obtaining release percentages of 4% (70:30), 15% (55:45), 20% (25:75) for the formulations, in comparison to the CAR which was 100%. Its release was slower when the proportions of PHY were increased in the formulation. In conclusion, the results demonstrated that nanoparticulate liquid systems for topical ocular delivery of CAR are of interest for further research.

Keywords: carvacrol; nanoparticle; lipids.

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Conflicts of Interest

The authors declare no conflict of interest.