

Time course study of oxyresveratrol inclusion complexes in aqueous solutions

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Abstract: The stilbenes are bioactive molecules with a big amount of health benefits and many possibilities in pharmaceutical industry. Several authors have reported a high number of properties for these compounds, including anticancer, antioxidant, anti-inflammatory, antidiabetic, neuroprotective or antimicrobial activities. However, their low aqueous solubility and their ease degradation could lead to low concentration of bioactive compound in the target tissue. For this reason, in the present study, the inclusion complexes of oxyresveratrol with α -, β -, and γ - cyclodextrins are characterized using DSC, TGA, SEM and molecular docking in order to increase the stability of the molecule. All these techniques showed that β -cyclodextrin (β -CD) forms the best complexes.

The stability of oxyresveratrol and oxyresveratrol/ β -CD complexes in different aqueous solutions was evaluated by measuring °Brix, pH and UV-Vis spectra. The effect of encapsulation on the solubility and antioxidant activity of oxyresveratrol was also analysed. The results indicated that solutions were stable for at least five weeks, especially when stored in darkness, and that cyclodextrin supplementation leads to a higher concentration and antioxidant capacity of the solubilized bioactive compound than when it is not used. These results and the increase in antioxidant activity could be interesting for the pharmaceutical industry and for drugs enriched in oxyresveratrol.

Keywords: Cyclodextrins, oxyresveratrol, antioxidant activity, encapsulation, stability.

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