

Abstract

# Study of the Antioxidant Activity, Solubility, Stability and Cyclodextrin Complexation of Gnetol <sup>†</sup>

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**Abstract:** Gnetol, a natural stilbene particularly found in genus *Gnetum*, has anti-inflammatory, anti-thrombotic, cardio-protective, and anti-cancer activity. However, the applications of this stilbene as a bioactive ingredient in foods, cosmetic or pharmaceutical industries, may be limited due to its low water solubility and its easy degradation. The encapsulation in cyclodextrins could solve these problems. This study compares the antioxidant activity of gnetol with other stilbenes analogues, encapsulates it in different cyclodextrins and evaluates the effect that this process has in water solubility. In addition, the effect of pH and temperature on the encapsulation constant is analysed. Our results reveal that the antioxidant activity of gnetol was higher than that of resveratrol, and similar or higher to that of oxyresveratrol. Moreover, the solubility in water of gnetol was 0.31 mg/mL, but the highest concentration of HP $\beta$ CD used could increase almost threefold the basal solubility, as well as its stability after storage for a week. Gnetol-HP $\beta$ CD encapsulation constants were influenced by changes in pH and temperature, decreasing when either of these parameters increased. All these results could increase the interest in gnetol, as well as aid in the development of more stable inclusion complexes that improve its aqueous solubility and stability for industrial use.

**Keywords:** Gnetol; antioxidant activity; molecular encapsulation; cyclodextrin; solubility

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