

## Enhanced antioxidant effect of trans-resveratrol: Potential of binary systems with polyethylene glycol and cyclodextrin (Article)

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### Abstract

Trans-resveratrol, a polyphenol extracted from *Vitis vinifera*, has different beneficial effects following its administration on the skin. Here the potential use of binary systems to enhance in vitro and in vivo activity of trans-resveratrol was investigated. Thus the aqueous solubility of trans-resveratrol was investigated in the presence of growing concentrations of polyethylene glycol (PEG) or  $\beta$ -cyclodextrin ( $\beta$ CD) as solubilizing excipients. Then, the solid dispersion of trans-resveratrol with PEG or inclusion complexes trans-resveratrol/ $\beta$ CD were prepared and characterised by different methods. Cytotoxicity and inhibition of reactive oxygen species (ROS) following  $H_2O_2$  challenge in the presence of trans-resveratrol, alone or associated to the excipients, was evaluated on human keratinocyte HaCaT cell line. Both the trans-resveratrol-containing binary systems induced significant reduction of  $H_2O_2$ -induced ROS production, especially in the case of  $\beta$ CD that was selected for the following phase of the study. Thus, the effect of a cream containing trans-resveratrol, alone or associated to  $\beta$ CD, on different skin parameters such as corneometry, colorimetry and elastometry, was evaluated on human volunteers. All patients showed a visible improvement of clinical conditions with a remarkable decrease of aging signs, but this effect was higher of the hemi face treated with the  $\beta$ CD-containing formulation versus formulation containing trans-resveratrol alone. © 2014 Informa Healthcare USA, Inc.