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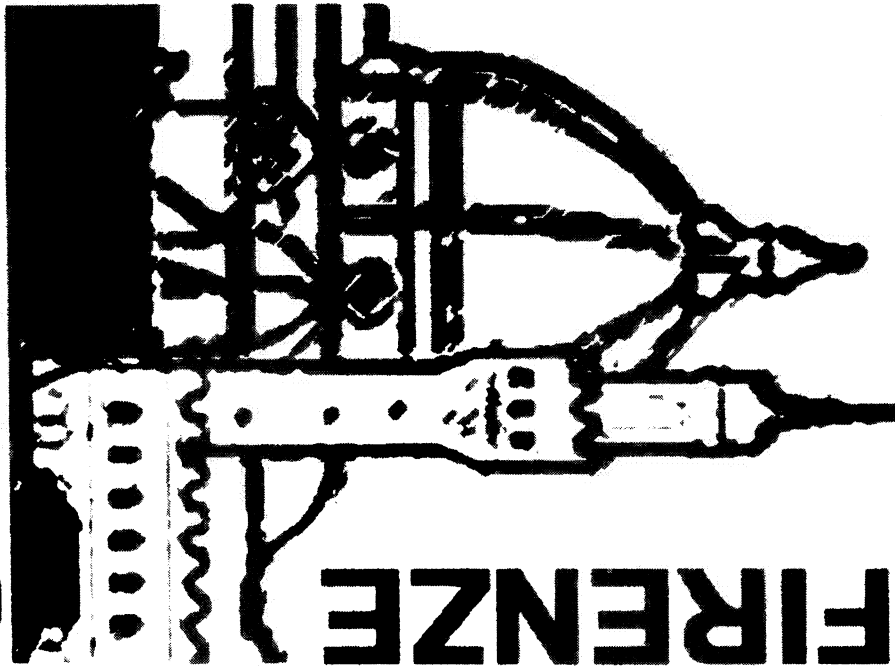

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P 2

ENHANCED ORAL BIOAVAILABILITY OF RESVERATROL USING LIPID FORMULATIONS

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Resveratrol, a polyphenolic phytoalexin present in different plant sources, has attracted increasing attention in recent years playing an important role in the prevention of many human diseases, especially for its antioxidant properties. The *in vivo* effect of resveratrol after oral administration is negligible when compared to its efficacy *in vitro*. Indeed, the molecule has a poor aqueous solubility and a hydrophobic nature which determines a low dissolution rate and an extensive presystemic metabolism. Moreover resveratrol is an extremely photosensitive compound. Several formulation strategies have been proposed to overcome these limitations and to improve solubility, chemical stability and oral bioavailability of the molecule. The aim of the present work was to develop a formulation in order to increase the bioavailability after oral administration; in particular liposomes and lipid complexes based on phosphatidylcholine were prepared and characterized. Commercial fitosomes were used for comparison purposes. The interaction of resveratrol with the different vehicles, demonstrated by Differential Scanning Calorimetry (DSC) and Fourier transform infrared spectroscopy (FTIR), produced a marked increase of the solubility and stability of resveratrol. The amount of resveratrol present in the complex was about 45 % w/w. The liposomes showed a loading efficiency of 78% and sizes about 500 nm. The in vitro release kinetics of resveratrol from the formulations was in vitro evaluated, showing a prolonged release profile over time. In vivo experiments were carried out administering orally the lipid formulations to rats. The plasma concentrations of resveratrol were higher with the lipid formulations than with the free drug. The bioavailability of resveratrol was enhanced three times after the lipid complex administration. Lipid formulations can be a strategy to improve the absorption and oral bioavailability of resveratrol.