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Enhanced colloidal stability, solubility and rapid dissolution of resveratrol by nanocomplexation with soy protein isolate

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1 **Enhanced colloidal stability, solubility and rapid dissolution of resveratrol**
2 **by nanocomplexation with soy protein isolate**

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9 **Abstract:**

10 The polyphenolic compound resveratrol has received significant attention due to its many
11 pharmacological actions such as anti-cancer, anti-inflammatory, antioxidant and
12 antimicrobial activities. However, poor solubility and stability are major impediments for
13 resveratrol's clinical effectiveness. In this work we have encapsulated resveratrol into soy
14 protein isolate nanoparticles using a simple rotary evaporation technique. Resveratrol-loaded
15 nanoparticles were around 100 nm in diameter and negatively charged. Nano-encapsulated
16 resveratrol was found to be in amorphous form and showed more than two times higher
17 solubility with significantly increased dissolution when compared to free resveratrol. Finally,
18 an *in-vitro* NF- κ B inhibition assay revealed that encapsulated resveratrol was stable and
19 retained bioactivity. This new formulation of resveratrol has the potential to boost the clinical
20 effectiveness of this drug and could be utilised for other poorly soluble hydrophobic drugs.

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22 **Keywords:** Resveratrol, soy protein isolate, nanocomplex, colloidal stability, solubility,
23 control release

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