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2 quercetin and linseed oil: Preparation and *in vitro* characterization studies

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14 **Running Title:** Quercetin and linseed oil co-loaded nanostructured lipid carrier

15 **Abstract:** Due to their poor solubility in hydrophilic matrices and chemical instability,
16 the applications of quercetin and linseed oil in functional foods are limited. In this
17 work we have encapsulated quercetin and linseed oil into NLC by high pressure
18 homogenization technique. Quercetin and linseed oil co-loaded nanoparticles were
19 less than 100 nm in diameter and spherical in shape. Nano-encapsulated quercetin was
20 found to be presented in NLC with less ordered lipid cores as an encapsulated
21 amorphous form. And the solubility of quercetin in hydrophilic matrices consisted of
22 linseed oil and surfactants was improved by at least 1300 folds. The addition of

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