

## Rutin and oxidative processes mediated by Fe(II) and Fe(III): effects on DNA damage and lipid peroxidation.

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The present work aims to evaluate the antioxidant properties of rutin, a flavonoid glycoside, in oxidative processes *in vitro* mediated by Fe(II) and Fe(III) and to examine the mechanisms by which this antioxidant character is manifested. Previous observations analyzed the effects on Rutin on hydroxyl formation via Fenton reaction (SBBq 2003/2006). Our studies showed reduction in oxidative breakage of super-coiled plasmid DNA in Fenton conditions from 88 % (10  $\mu$ M Fe(II), 20  $\mu$ M H<sub>2</sub>O<sub>2</sub>) to 29% with rutin (50  $\mu$ M) added to the reaction media. Rutin could not prevent plasmid DNA breakage from Fe(III)-ascorbate, although it has inhibited rat liver homogenate lipid peroxidation induced by these reagents (30  $\mu$ M Fe(III), 200  $\mu$ M ascorbate, 60  $\mu$ M rutin). Temporal analysis (4 h) of rat liver homogenate lipid peroxidation by Fe(III)-ascorbate (60  $\mu$ M and 200  $\mu$ M respectively) showed antioxidant protection by rutin (60  $\mu$ M and 120  $\mu$ M) when compared to those of media containing citrate (120  $\mu$ M). Results showed that protection against oxidative damage subsides within the reaction time (rutin 60  $\mu$ M), pointing to a radical-scavenging protection mechanism. Complete suppression of lipid peroxidation was observed in media containing rutin or BHT (120  $\mu$ M) in this temporal analysis.

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