Protection Against Nitric Oxide Genotoxicity by *Ginkgo biloba* Extract

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For a long time, plants have been used in traditional medicine to treat various health conditions despite the lack of knowledge about their effects and benefits. Over the last years, a considerably good reputation involving the use of the *Ginkgo biloba* plant has been growing within the scientific community and today its potential in terms of beneficial effects is very well sustained in the literature. However, most of those studies only face towards the antioxidant properties and just a little was explored relatively to any antigenotoxic activity.

The excessive production of oxidative species, being ROS or RNS, can reveal to be stressful to the cell to a point where it compromises survival. In between their molecular targets, reactive oxygen species can affect DNA, possibly causing loss of stability and integrity, and becoming a very dangerous threat. SNP is a NO-releasing agent that can be used to simulate an excessive increase in NO production. Depending on the molecules it encounters inside the cell, NO may oxidize into peroxynitrite or dinitrogen trioxide (among many others), both molecules being able to interact with and modify DNA.

So far, the chemical analysis of the ethanolic extract from *Ginkgo biloba* leaves revealed the presence of some characteristic compounds and the properties of the extract were tested *in vitro* with positive results. An effect of protection against SNP was observed in viability assays with the fission yeast *Schizosaccharomyces pombe* wild type strains and DNA repair-affected mutants. The analysis of cell cycling revealed that *Ginkgo biloba* alone causes a quicker advance in cell cycle progression and that treatment with *Ginkgo biloba* extract slightly reduces the delay caused by exposure to SNP. Finally, experiments involving green fluorescent protein fused with oxidative stress response Sty1 and Pap1 proteins pointed to a possible protection mechanism, where the interaction with the extract may be functioning as a mild stress elicitor, preparing cells for the stress induced by NO.

Agradecimentos
Devem ser colocados depois da figura ou tabela [Arial Tamanho 9]

Referências
Devem ser formatadas de acordo com os exemplos apresentados em baixo [Arial Tamanho 9]
[1] X. Author, Y. Author, Z. Author, Journal name, 20 (2001) 537.
[2] X. Author, Y. Author, Z. Author, Proc. of congress name, City, Country, 2014, 10.
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