DNA protective effect of *Ginkgo biloba* extract persists after simulation of the human digestion *in vitro*

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The *Ginkgo biloba* leaf extract (GBE), widely used in traditional Chinese medicine, has been intensively studied and sold all over the world due to its many health benefits, including the treatment of degenerative diseases. Although the antioxidant properties of GBE are well documented [1-2], studies on its antigenotoxicity are still scarce.

The colon is continuously exposed to a diversity of dietary compounds, some of them potentially carcinogenic, that may increase oxidative stress and affect DNA integrity and cell genetic information, contributing to colorectal cancer (CRC) development. Diets that are rich in antioxidant polyphenolic compounds have been associated with CRC prevention.

Since GBE was revealed to be mainly composed of antioxidant polyphenols, namely flavonoids, the extract could prevent DNA damage and consequently CRC initiation. Thus, GBE was subjected to *in vitro* simulated human digestion (described by [3]), originating a product (DGBE) that represents the extract when it reaches the colon during the digestive process. Both forms of the extract demonstrated *in vitro* antioxidant activity, DPPH and NO scavenging activity and iron chelating activity for GBE and NO scavenging activity and iron chelating activity for DGBE. The extracts were tested in human colorectal adenocarcinoma cell line (HT-29) for their cytotoxicity (MTT assay) and antigenotoxicity (comet assay), where cells were pre-treated with each extract and subsequently challenged with H_2O_2 (75 μM). GBE and DGBE did not affect cell viability and prevented DNA damage induced by oxidative stress. The DNA protective effect may be due to stimulation of antioxidant defence mechanisms or DNA repair, or induction of mild stress in cells which causes cell adaption to H_2O_2. Thus, GBE exhibits an antigenotoxic effect, retained after digestion and indicating a CRC preventive role, probably due to the antioxidant properties provided by flavonoids and suggested by the results of *in vitro* antioxidant assays.

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