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## DNA damage in human lymphocytes exposed to four food additives in vitro

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### Abstract

In vitro genotoxic effects of antioxidant additives, such as citric acid (CA) and phosphoric acid (PA) and their combination, as well as antimicrobial additives, such as benzoic acid (BA) and calcium propionate (CP), on human lymphocytes were determined using alkaline single-cell gel electrophoresis. There was a significant increase in the DNA damage in human lymphocytes after 1 h of in vitro exposure to CA, PA, BA and CP (200, 25-200, 50-500, 50-1000 µg/mL, respectively). The combination of CA and PA significantly increased the mean tail intensity at all the concentrations used (25-200 µg/mL) and significantly increased the mean tail length mainly after higher concentrations (100 and 200 µg/mL). Data in this study showed that the concentrations of food additives used induce DNA damage and PA was the most genotoxic and CA was less genotoxic additives among them.

**Keywords:** Food additives; benzoic acid; calcium propionate; citric acid; comet assay; phosphoric acid.

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