Do spices have health benefits besides flavoring? Anticarcinogenic and pro-oxidant activities of spices

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Spices are rich in phenolic compounds and show a wide range of biological activities. In this study, the DNA protecting activity of 9 spices was analyzed. 3T3-L1 mouse fibroblasts were pre-incubated with 50 mg/ml of ethanolic extracts of the spices and then exposed to oxidative stress using 100 mM/ml of H2O2. The oxidative DNA damage and the protective effects of the spice extracts were examined using the comet assay. A statistically significant decrease in comet tail length was observed in cells pretreated with extracts of ginger, caraway, cumin, fennel, cardamom, star anise and long pepper. Analysis of pro-oxidant activities in clove, pepper and long pepper showed a statistically significant increase in DNA damage. In addition to reported antioxidant, antimicrobial and antitumor activities of spices, this study reveals their anticarcinogenic and pro-oxidant activities.