Effects of 6-Gingerol, an Antioxidant from Ginger, on Inducing Apoptosis in Human Leukemic HL-60 Cells

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Abstract

6-Gingerol, a naturally occurring plant phenol, is one of the major components of fresh ginger. In this paper, the antioxidative effects of 6-gingerol were detected by DPPH and DCFH assays and, as predicted, 6-gingerol as an antioxidant was shown to protect HL-60 cells from oxidative stress. Moreover, it induced cell death in promyelocytic leukemia HL-60 cells, caused DNA fragmentation and inhibited Bcl-2 expression in HL-60 cells. These results suggested that the inhibition of Bcl-2 expression in HL-60 cells might account for the mechanism of 6-gingerol-induced apoptosis. In the inhibitory assay, the cytotoxic effect of 6-gingerol could be prevented by catalase. We suggest that 6-gingerol induced cell death by mediating reactive oxygen species such as hydrogen peroxide and the superoxide anion. Therefore, the results showed that 6-gingerol induced apoptosis in HL-60 cells, not due to its antioxidative activity.