Differential Effects of Vegetable-Derived Indoles on the Induction of Quinone Reductase in Hepatoma Cells

CHEN Yue-Hwa ; YANG Darlene
Chen Y-H and Yang D

Abstract

The increased expression of quinone reductase (QR) has been associated with anticarcinogenic processes. The aim of this study was to explore the roles of the cruciferous vegetable-derived indoles, indole-3-carbinol (I3C) and indolo[3,2-b]carbazole (ICZ), on the regulation of QR in both murine (Hepa-1) and human (HepG2) hepatoma cells. The results indicate that ICZ enhanced QR activity in both Hepa-1 and HepG2 cells, whereas its parent compound, I3C, had no significant effect on the induction of OR. Moreover, the ICZ-induced QR activity showed a higher response and expressed a more-significant dose-response in Hepa-1 cells. QR mRNA expression as analyzed by RT-PCR demonstrated a pattern similar to that of the enzyme activity. In conclusion, I3C did not show an enhancement effect on QR activity, but its acidic derivative, ICZ, increased the expression of QR mRNA, which then caused the augmentation of QR activity in Hepa-1 and HepG2 cells.