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## Effects of Cooking Methods of Cabbage on the Production of TNF- $\alpha$ and Induction of Quinone Reductase in Hepa 1c1c7 Cells

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This study focused our attention on the changes in physiological activities of cabbage after treatment under various cooking conditions. Fresh, boiled, broiled and acid-treated cabbage juices and solutions after cooking were examined for their priming effects of the endogenous production of tumor necrosis factor (TNF- $\alpha$ ) in mice, the induction of quinone reductase [NAD(P)H: (quinone-acceptor) oxidoreductase, EC1.6.99.2: QR] in Hepa 1c1c7 cells, and the anti-proliferative activities on Hepa 1c1c7 cells. Boiled and broiled cabbage juices as well as fresh juice significantly increased the production of TNF- $\alpha$  and raised the potency of QR induction activities. Acid-treated cabbage juice was little effective in enhancing the productivity of TNF- $\alpha$  or the induction of QR. The growth of Hepa 1c1c7 cells was inhibited by fresh and broiled cabbage juices.

**Keywords:** [cabbage](#), [TNF- \$\alpha\$](#) , [quinone reductase](#), [Hepa 1c1c7](#)

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