

OR-65**Potential of Pterostilbene in Cancer Chemoprevention by Enhancing Phase 2 Detoxifying Enzymes**

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Detoxifying enzymes are one of the potential tools in protection against xenobiotics which may lead to cancer. Induction of phase 2 detoxifying enzymes such as glutathione S-transferase (GST) and its thiol conjugate, glutathione (GSH) as well as the NAD(P)H: quinoneoxidoreductase (NQO1) facilitate the excretion of carcinogens thus protect from carcinogenesis. Pterostilbene, an analogue of resveratrol, has demonstrated numerous pharmacological activities including chemoprevention. This study was conducted to investigate the potential of pterostilbene as a cancer chemopreventive agent using HT-29 colon cancer cell line to study the modulation of GST and NQO1 activities as well as the GSH level. Initially, our group established the optimum dose of 24 hours pterostilbene treatment on HT-29 cell line using MTT assay. Then, the effects of pterostilbene (0-50 μM) towards GST and NQO1 activity and GSH level were determined using GST, NQO1 and Ellman assays respectively. Protein expressions of the enzymes were further established using Western Blotting techniques. MTT assay of pterostilbene (0 -100 μM) showed that pterostilbene did not cause cytotoxicity on HT-29 cell line. Treatment of pterostilbene increased GST activity in the cell line significantly ($p < 0.05$) at 12.5 and 25.0 μM that were reported as 4277.22 ± 489.32 and 4617.12 ± 345.95 nmol/min/mg protein respectively. In addition, treatment of 50 μM pterostilbene increased the GSH level significantly ($p < 0.05$) with the value of 75.54 ± 5.92 nmol/mg protein. Pterostilbene also enhance NQO1 activity significantly ($p < 0.05$) at 12.5 μM and 50 μM with the value of 3973.82 ± 177.33 and 4219.60 ± 321.18 nmol/min/mg protein respectively. Hence, pterostilbene is a potential chemopreventive agent through its modulation of detoxifying enzymes.

Keywords: Pterostilbene, detoxifying enzymes, glutathione S-transferase, glutathione, NAD(P)H: quinoneoxidoreductase.
