
Antioxidant and antigenotoxic effects of plant cell wall hydroxycinnamic acids in cultured HT-29 cells.

Ferguson LR, Zhu ST, Harris PJ.

Discipline of Nutrition, Faculty of Medicine and Health Sciences. The University of Auckland, Auckland, New Zealand. l.ferguson@auckland.ac.nz

Abstract

We demonstrate that two hydroxycinnamic acids, (E)-ferulic acid and (E)-p-coumaric acid, have the ability to protect against oxidative stress and genotoxicity in cultured mammalian cells. They also show the ability to reduce the activity of the xenobiotic metabolising enzyme, cytochrome P450 1A, and downregulate the expression of the cyclooxygenase-2 enzyme. At equitoxic doses, their activities are equal to or superior to that of the known anticarcinogen, curcumin. The hydroxycinnamic acids are both important components of plant cell walls in certain plant foods. It is known that the action of microbial hydroxycinnamoyl esterases can lead to the release of hydroxycinnamic acids from ester-linkages to cell wall polysaccharides into the human colon. Thus, providing they can reach effective levels in the colon, they could provide an important mechanism by which dietary fibres of food plants, such as spinach or cereal, protect against colon cancer.

PMID: 15841493 [PubMed - indexed for MEDLINE]