

Deleterious Effect of p-Cresol on Human Colonic Epithelial Cells Prevented by Proanthocyanidin-Containing Polyphenol Extracts from Fruits and Proanthocyanidin Bacterial Metabolites

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Resumen

The protective effect of proanthocyanidin-containing polyphenol extracts from apples, avocados, cranberries, grapes, or proanthocyanidin microbial metabolites was evaluated in colonic epithelial cells exposed to p-cresol, a deleterious compound produced by the colonic microbiota from L-tyrosine. In HT29 Glc(-/+) cells, p-cresol significantly increased LDH leakage and decreased ATP contents, whereas in Caco-2 cell monolayers, it significantly decreased the transepithelial electrical resistance and increased the paracellular transport of FITC-dextran. The alterations induced by p-cresol in HT29 Glc(-/+) cells were prevented by the extracts from cranberries and avocados, whereas they became worse by extracts from apples and grapes. The proanthocyanidin bacterial metabolites decreased LDH leakage, ameliorating cell viability without improving intracellular ATP. All of the polyphenol extracts and proanthocyanidin bacterial metabolites prevented the p-cresol-induced alterations of barrier function. These results suggest that proanthocyanidin-containing polyphenol extracts and proanthocyanidin metabolites likely contribute to the protection of the colonic mucosa against the deleterious effects of p-cresol.

Palabras clave

Palabras clave de autor: p-cresol; mitochondria; proanthocyanidins; colonic cells; microbiota; avocado; apple; cranberry; grapes; gut barrier function

KeyWords Plus: HELICOBACTER-PYLORI UREASE; APPLE PEEL POLYPHENOLS; GUT MICROBIOTA; FECAL MICROBIOTA; CACO-2 CELLS; 3,4-DIHYDROXYPHENYLACETIC ACID; PROCYANIDINS; FERMENTATION; INDOMETHACIN; SUPPLEMENTS

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