

**Antioxidant effectiveness of phenolic apple juice extracts and their gut fermentation products in the human colon carcinoma cell line caco-2.**

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[Bellion P](#), [Hofmann T](#), [Pool-Zobel BL](#), [Will F](#), [Dietrich H](#), [Knaup B](#), [Richling E](#),  
[Baum M](#), [Eisenbrand G](#), [Janzowski C](#).

Division of Food Chemistry and Toxicology, Department of Chemistry, University of Kaiserslautern, Erwin-Schroedinger-Str. 52, D-67663 Kaiserslautern, Germany.

Apples represent a major dietary source of antioxidative polyphenols. Their metabolic conversion by the gut microflora might generate products that protect the intestine against oxidative damage. We studied the antioxidant effectiveness of supernatants of fermented apple juice extracts (F-AEs, 6 and 24 h fermentation) and of selected phenolic degradation products, identified by HPLC-DAD-ESI-MS. Cell free antioxidant capacity of unfermented apple juice extracts (AEs) was decreased after fermentation by 30-50%. In the human colon carcinoma cell line Caco-2, F-AEs (containing <0.5% of original AE-phenolics) decreased the reactive oxygen species (ROS) level more efficiently than the F-blank (fermented without AE) but were less effective than the respective AEs. Similarly, antioxidant effectiveness of individual degradation products was lower compared to respective AE constituents. Glutathione level was slightly increased and oxidative DNA damage slightly decreased by fermented AE03, rich in quercetin glycosides. In conclusion, F-AEs/degradation products exhibit antioxidant activity in colon cells but to a lesser extent than the respective unfermented AEs/constituents.