

Polyphenols protect the epithelial barrier function of Caco-2 cells exposed to indomethacin through the modulation of occludin and zonula occludens-1 expression

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The aim of this study was to determine the protective effect of quercetin, epigallocatechingallate, resveratrol, and rutin against the disruption of epithelial integrity induced by indomethacin in Caco-2 cell monolayers. Indomethacin decreased the transepithelial electrical resistance and increased the permeability of the monolayers to fluorescein-dextran. These alterations were abolished by all the tested polyphenols but rutin, with quercetin being the most efficient. The protective effect of quercetin was associated with its capacity to inhibit the redistribution of ZO-1 protein induced in the tight junction by indomethacin or rotenone, a mitochondrial complex-I inhibitor, and to prevent the decrease of ZO-1 and occludin expression induced by indomethacin. The fact that the antioxidant polyphenols assayed in this study differ in their protective capacity against the epithelial damage induced by indomethacin suggests that this damage is due to the ability of this agent to induce not o