

# Molecular mechanisms of gastrointestinal protection by quercetin against indomethacin-induced damage: Role of NF- $\kappa$ B and Nrf2

Carrasco-Pozo, Catalina

Castillo, Rodrigo L.

Beltrán, Caroll

Miranda, Alfonso

Fuentes, Jocelyn

Gotteland, Martin

© 2015 Elsevier Inc. The aim of this study was to determine the gastrointestinal protection by quercetin against indomethacin-induced oxidative stress and inflammation, with specific interest in studying the underlying molecular mechanisms. We hypothesized that the quercetin-protective effect relies on its antioxidant and antiinflammatory properties. Rats were pretreated with quercetin (50- or 100-mg/kg, ig single dose), 30 min before INDO administration (40-mg/kg ig single dose). Caco-2 cells were treated with INDO (250 and 500  $\mu$ M) in the absence or presence of quercetin (10  $\mu$ g/ml). Quercetin prevented the decrease in nuclear translocation of Nrf2, a key regulator of the antioxidant response, and the increase in reactive oxygen species levels induced by INDO by inhibiting the enhancement of NADPH oxidase and xanthine oxidase activities as well as the reduction in superoxide dismutase and glutathione peroxidase activities in gastric and ileal tissues. Quercetin also prevented INDO-induc