

Piperine Regulates Nrf-2/Keap-1 Signalling and Exhibits Anticancer Effect in Experimental Colon Carcinogenesis in Wistar Rats.

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A recent study delineated the molecular basis of action of piperine, an alkaloid present black pepper against colon carcinogenesis. As a chemopreventive agent, piperine targeted Nuclear factor-erythroid 2-kelch-like ECH-associated protein 1(Nrf-2/Keap-1)/Heme-oxygenase1 (HO-1) signaling pathway, which plays a vital part in shielding cells from intracellular oxidative stress and inflammation 1,2-Dimethylhydrazine induced colorectal cancer in an animal model. Piperine inhibited NF- κ B by the activation of Nrf-2, blocking downstream inflammatory mediators/cytokines (TNF- α , IL-6, IL-1 β , Cox-2, PGE-2, iNOS, NO, MPO), triggering an antioxidant response machinery (HO-1, NQO-1, GSH, GR, GPx, CAT, SOD), scavenging ROS, and decreasing lipid peroxidation. Moreover, it also downregulates CEA, MDF and ACF, markers of precancerous lesions in colon and alleviates infiltration of mast cells. In summary, the findings of this study shows that piperine is an effective molecule which can be used as an prophylactic treatment agent for colon carcinogenesis which acts by targeting the NF- κ B/Nrf-2/Keap-1/HO-1 pathway.

Reference

<https://pubmed.ncbi.nlm.nih.gov/32967203/>