Cancer Prevention Research

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AACR American Association for Cancer Research

December 2018 • Volume 11 • Number 12

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ABOUT THE COVER

Primary liver cancer (hepatocellular carcinoma, HCC) is on the rise in the United States, where it continues to increase in both incidence and death rate. Since there is no effective treatment for HCC, it is important to understand how whole foods rich in phytochemicals and natural chemicals found in plants, can protect against the development of HCC. In the current study, the chemopreventive effects of dietary tomato powder rich in lycopene was investigated in a diethylnitrosamine initiated and high fat diet-promoted HCC mouse model. The cover shows the histological section of a HCC from the liver of a male mice (H&E staining) in the absence of lycopene cleavage enzymes. The tomato powder feeding significantly decreased HCC incidence, multiplicity, and tumor volume independent of lycopene cleavage enzymes. The protection provided by tomato powder feeding was associated with the inhibition of inflammatory cytokines, inductions of hepatic sirtuin 1 deacetylase and circadian clock genes and improved gut microbial richness and diversity. The present study provides new insights into the mechanisms underlying the beneficial effect of tomato and tomato products against cancer development.