

Growth inhibition, cell-cycle arrest and apoptosis in human hepatocellular carcinoma HepG2 cells by bergamot juice

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Among cancers, hepatocellular carcinoma is one of the common worldwide, and its incidence is increasing around the world. A lot of evidence underline that natural substances usually assumed by the diet can have an important role in the prevention of cancer. *Citrus bergamia* Risso et Poiteau (bergamot) is a small tree cultivated almost exclusively along the southern coast of Calabria region (Italy), mostly used for the extraction of its essential oil from the fruit peel, while bergamot juice (BJ), obtained from the endocarp of the fruit, is considered a a secondary and discarded product.

Here we present results demonstrating that *Citrus bergamia* (bergamot) juice (BJ) reduces the growth rate of human hepatocellular carcinoma HepG2 cells in a time- and concentration-dependent manner, by a mechanism involving the activation of apoptotic machinery via both intrinsic and extrinsic pathways. Moreover, BJ increased expression of P53 and P21 proteins that may be responsible for the HepG2 cell cycle arrest in G2 phase. In addition, BJ suppressed NF- κ B activity. Our data demonstrate the ability of BJ in reducing the growth of HepG2 cells, revealing its mechanism of action and suggesting a promising role as anticancer drugs.

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