presentation, we will also discuss our research progress identifying the active chemopreventive compounds from kava.

Thus, for the first time, we demonstrate that oral kava is safe and prevents lung tumorigenesis, which could be mediated via inhibition of NF-κB activation, resulting in a suppression of proliferation and an increase of apoptosis in lung tumors.

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Fermentation products of inulin-type fructans reduce proliferation and induce apoptosis in human colon tumor cells of different stages of carcinogenesis

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Inulin type fructans are prebiotic food ingredients, which reach the colon undigested, and are fermented by colonic microflora to short chain fatty acids (SCFA). Individual SCFA, like butyrate, inhibit growth and enhance apoptosis of colon cancer cells. Little is known about cellular responses to complex fermentation samples. Therefore, we prepared fermentation products of inulin and studied biological properties in two human colon cell lines, LT97 and HT29 (representing early and late stages of colon cancer). Inulin enriched with oligofructose (Synergy 1 Orafti®) was incubated under anerobic conditions with fecal inoculums and the supernatant was characterized for content of SCFA and secondary bile acids; namely desoxycholic acid (DCA) content. The fermentation supernatant (SFS) as well as a synthetic fermentation mixture (SFM) mimicking fermentation sample in SCFA and DCA content was used to treat both cell lines in concentration range of 1.25–20 % v/v for 24–72 h. The effects on cell growth were determined by quantifying DNA and effects on apoptosis were analyzed by measuring PARP (poly ADP-ribose polymerase) cleavage using Western blotting. Compared to fecal control (containing only fecal inoculum), fermentation supernatants resulted in almost 2.5 fold increase of SCFA and 3.4 fold decrease of DCA. In comparison to HT29 cells (EC50 = 10.3 %, 9.3 %), LT97 cell lines responded more sensitively to the growth inhibitory activities (EC50 = 4.9% and 4.3%) after 48 and 72 h. The synthetic mixture also displayed comparable effects, indicating that SCFA and DCA are indeed the active parts of SFS. Additionally, treatment of both cell lines with SFS and SFM resulted in a specific and time dependant cleavage of PARP demonstrating induction of apoptosis. Here too, the LT97 cells were found to be more sensitive in comparison to HT29 cell lines. Our results indicate growth inhibiting and apoptosis inducing effects of fermentation supernatants of inulin which support their role in secondary chemoprevention. Moreover, since early adenoma cells were found to be more sensitive, this may have important implications for chemoprevention when translated to in vivo situation, to reduce survival of early transformed cells and thereby reduce the formation of malignant tumors.