

POSTER PRESENTATION

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# Modulation of DNA damage prevention and signaling pathways in diet induced colon cancer prevention

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Colorectal cancer (CRC) is a common malignancy and significant cause of mortality in Western societies. It develops through an accumulation of genetic and epigenetic alterations, transforming normal colon cells and giving them growth advantage. Epigenetic alterations are reversible and studies have shown that dietary compounds can alter the epigenetic status and reactivate epigenetically-silenced genes. Many food plants are rich in bioactive compounds and have shown to possess anticancer properties.

We proposed to explore the effects of sage (*Salvia officinalis* (SO)) water extract (herbal tea) drinking on colon cancer prevention and modulation of epigenetic events. F344 rats were used to study the effects of sage tea drinking on pre-initiation (SO treatment before AOM exposure) and post-initiation (SO after AOM exposure) phases of carcinogenesis. We found a chemopreventive effect of SO in the pre-initiation group, but not in the post-initiation. We then investigated if SO affected AOM metabolism, searching for effects on CYP2E1 expression and activity. We found that AOM decreased CYP2E1 activity when compared with control, but SO treatment before AOM prevented this effect. The capacity of SO in vivo treatment to protect colonocytes from H<sub>2</sub>O<sub>2</sub> damage induced *in vitro* was also investigated. SO decreased significantly the oxidative H<sub>2</sub>O<sub>2</sub>-induced DNA damage. We also are searching for alterations in expression of key proteins involved in signalling pathways important for cell proliferation or apoptosis and proteins involved in DNA repair.

Sage water extract seems to have the ability to prevent CRC and studies to further explore this potential are ongoing.

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