PHYSIOLOGICAL FUNCTIONS OF ANTHOCYANIDINES

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Anthocyanines are common coloured plant flavonoids, occurring as glycosides of the respective anthocyanidin-chromophores (1). They have been implicated in contributing to the "French paradox" due to the antioxidative capacity of red wine (2). Like other flavonoids, anthocyanidines are also expected to have antioxidative, antimutagenic and anticarcinogenic properties *in vivo,* although only few data on physiological functions of food derived derivatives are available (3). For the concept of colon cancer prevention, we have therefore begun a series of investigations to study the effects of these compounds on early processes of tumorigenesis in human colon cells. We used *Aronia melanocarpa* Elliot anthocyanidine (AA) -extracts isolated by column chromatography (yield: 1000 ml extract with 16 mg AA/ml from 2 kg fruit). The extracts were used to treat cells of primary human colon biopsies (to study events related to initiation of cancer) and of the human tumor cell line HT29 clone 19A (to study events of signal transduction during progression of tumors). In primary colon cells, high doses of the AA (50-400 μg/ml) were genotoxic, whereas low doses (25 μg/ml) prevented DNA damage induced by H_2O_2, as detected with the Comet assay (4). At still lower doses (3.125-6.25 μg/ml) a significant reduction of cell metabolism was observed in HT29 cells, as determined with a CYTOSENSOR MICROPHYSIOMETER (5). This reduction was due to impairment of neurotensin- and insulin- stimulated acidification, implying interference of both G protein- and receptor tyrosin kinase -linked signalling pathways.

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ABSTRACTS

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