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Black mulberry (*Morus nigra*) phenolics and anti-carcinogenicity: Anti-proliferation of black mulberry powder on selected CA lines

Phenolic compounds, ubiquitous in fruits, vegetables and plants, are of considerable interest and have received great attention in recently owing to their bioactive functions. Polyphenols are amongst the most desirable phytochemicals due to their antioxidant activity and those components are known as secondary plant metabolites and possess also antimicrobial, antiviral and anti-inflammatory and anti-carcinogenic properties along with their high antioxidant capacity. Plant phenolics, especially such as flavonoids, phenolic acids, lignans and stilbenoids, modulate several important biological processes in mammalian cells and show anti-carcinogenic properties in preclinical PCa models and concerning studies are limited. *Morus nigra* is a deciduous tree growing to 10-13 m tall and it is mulberry type, especially specific to Asian continent. Its edible fruits are dark violet or black color. Anatolia is home of the mulberry fruit and one of the oldest culture area. In many agricultural areas of our country, high quality mulberry fruit is grown owing to the cultivation conditions are so convenient. It is reported that black mulberry fruit have anti-diabetic, anti-oxidative, and anti-inflammatory effects and it is positive efficient on urinary system. It contains phenolic phytochemicals as intense degree. Black mulberry fruit is rich in carotenoid and flavonoid bioactives, also alkaloids, vitamins, oils (linoleic acid, palmitic acid, oleic acid), sugars (glucose, fructose) and minerals are other constituents. Due to its antioxidant content, the antioxidant activity of black mulberry is high and its bioactive compounds, flavonoids and anthocyanins are in quite wide range. Black mulberries contain rutin, myricetin, quercetin, kaempferol as flavonols; isoquercetin (quercetin 3-O-4C1-B-D-glucoside) as flavonol glycosides; p-coumaric, p-hydroxybenzoic, chlorogenic, ferulic, gallic, vanillic acid as phenolic acids; (+)-catechin, epicatechin, epigallocatechin all as flavanols; morusin, moracin M2, cyclomorusin, apigenin as flavon structure phenolic compounds; naringenin as flavonoid; cyanidin 3-O-glucoside, cyanidin 3-O-rutinoside, pelargonidin 3-O-glucoside, pelargonidin 3-O-rutinoside as anthocyanins and cyanidin, pelargonidin phenolics as aglycon forms of anthocyanins (called as anthocyanidins); resveratrol as stilbenes; oxyresveratrol, mulberrosin A (Oxyresveratrol-4-O-b-D-glucopyranosyl-3-O-b-D-glucopyranoside or 2,4,3',5'-tetrahydroxy-stilbene), kuwanon C5, kuwanon C6 as resorcinol type phenolic compounds; β -sitosterol-3-O- β -D-glucoside as steroidal saponins; ursolic acid, oleanolic acid as triterpenic acids. The studies of the flavonoid fractions obtained from black mulberry (*Morus nigra*) on anti-proliferation of cancer cell lines and its anti-cancer effects are limited. It is reported that major phenolic substance *Morus iniflavon* in *Morus alba* type white mulberries has been inactive the STAT3 signals in prostate cancer cells (PCa) and has been triggered apoptosis (cell death) and no findings could be found belongs to *Morus nigra* (black mulberry). Besides, anti-proliferative effects of the bioactive profiles of white colour mulberries on hepatocarcinoma cell lines (HepG2) was determined and it is reported that white mulberry bioactive compounds are effective on liver cancer and no findings could be found belongs to *Morus nigra* (black mulberry). It is put forward that apigenin flavonoid phenolic in all mulberry types can be blocked human T-24 bladder cancer cells and has been triggered apoptosis.

Biography

Ozlem Tokusoglu has completed her PhD from Ege University in the Department of Food Engineering, Izmir, Turkey. She professionally worked at the Ege University Department of Chemistry and Food Engineering. She was a Research Associate at the Food Science and Nutrition Department at the University of Florida, Gainesville, Florida, USA and at the School of Food Science, Washington State University, Pullman, in the State of Washington, USA. She is currently also working as an Associate Professor, faculty member in Department of Food Engineering of Celal Bayar University. Her study focuses on nutrition, food quality control, food chemistry, food safety, toxicology, shelf-life of foods and innovative food processing technologies and functional products. Her specific study areas are phenolics, phytochemicals, bioactive anti-oxidatives and anti-carcinogens components and food toxicants. She has conducted academic research studies, keynote addresses and academic presentations at many countries and meetings. She has published more than 150 studies in journals and conferences. She is the Editor of book of CRC Press Taylor and Francis and has three scientific books. She has been serving as an Editorial Board Member, Associate Editor and Section Editor of scientific journals.

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