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BLUEBERRIES LEAVE INDELIBLE MARK ON GOOD HEALTH

Look out, apples – here comes the blueberry in a bid to take on the role of keeping the doctor away. Scientists continue to uncover more evidence that supports a recommendation to take a daily dose of blueberries, a rich source of compounds with arrestingly diverse health benefits.

It's in large part due to their colour, says Dr. Wilhelmina Kalt, a food researcher at Agriculture and Agri-Food Canada's (AAFC) Atlantic Food and Horticulture Research Centre in Kentville, Nova Scotia. She's been focusing her scientific lens on the nutritive qualities of blueberries for some time now, and still shakes her head in wonder at the healthy punch they pack.

Dr. Kalt's work heralds a new approach to food science at AAFC, namely, the study of linkages between specific food compounds and human health. Developing this knowledge will allow producers to adopt health marketing strategies and help consumers to make better informed choices about their food.

Moreover, this line of enquiry is yielding some fascinating results, especially about blueberries.

"In studies ranging from neuroscience to cardiovascular health, the evidence is strongly in favour of the health functionality of blueberries," says Dr. Kalt.

The blueberry family (Vaccinium in botanical parlance) has long been associated with good health. Its medicinal uses were noted in mediaeval times, but the science behind the claims is much more contemporary. Studies from Europe in the 1960s and '70s focused on blueberries' potential benefits to blood vessels and eyes, but by the mid 1990s, public interest in antioxidants began to drive research directions.

Scientists were intrigued by the apparent effects, and especially the antioxidant effects, of a group of compounds called phenolics, including flavonoids, and especially the colourful anthocyanins.

Anthocyanins are the pigments found in many fruits and vegetables, but are particularly abundant in blueberries. They usually come in reds and blues and are the reason you don't want to spill red wine on your white shirt.

But stain potential aside, blueberries have such a catalogue of health benefits that it's worthwhile to add it up. Citing research from 'test tube' and animal studies, scientists point to blueberries' anti-inflammatory properties, their ability to delay the onset of age-related cognitive and motor function decreases, provide some possible Parkinson's disease protection, aid in ischemic stroke recovery, and help reduce cholesterol and prevent colon cancer.

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Biomedical evidence continues to mount in support of blueberries as a boon to health, and Dr. Kalt and her team are making efforts to further shore it up. They've made a key contribution by developing procedures to isolate the specific blueberry flavonoids to determine which of these compounds may be responsible for particular health benefits. Thanks to the fractionation technologies coming from Dr. Kalt's research, scientists have also been able to better profile the composition of the fruit. Her research also continues to evaluate the effects of processing, handling or growing conditions on the berries' bioactive flavonoids.

Moreover, Dr. Kalt's team has managed to scale up the flavonoid fractionation process to produce the quantities needed for animal feeding studies. Evidence from animal feeding studies provides stronger evidence for physiological effects as compared to the small- scale 'test tube' (*in vitro*) studies, where these flavonoid fractions had previously been studied.

Dr. Kalt's group has just wrapped up a human clinical study in collaboration with Dalhousie University in Halifax that follows up on earlier research from Europe. The focus was on night vision, specifically to determine whether and by how much blueberry compounds could influence aspects of night vision in humans with normal vision. The results are being tabulated prior to submission for journal publication.

Another interesting study has recently been completed by Dr. Kalt and the Atlantic Veterinary College in Charlottetown, Prince Edward Island. Here researchers looked at the impact of blueberries on cholesterol levels. They observed that pigs fed a diet high in sugar and fat experienced a decrease in cholesterol levels when blueberries were added to the rations.

But the effect was more dramatic when the blueberries were added to a more sensible plant-based diet, suggesting that the benefits from blueberries come from a synergistic interaction with other plant compounds.

"Even though there are obvious benefits from eating blueberries, these things can't be taken in isolation," says Dr. Kalt.

"Having a lot of blueberries in the diet is great" says Dr. Kalt but she also urges that blueberries be part of a diet that is rich in a variety of fruits and vegetables.

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