

RED RASPBERRY TECHNICAL NEWS

Red Raspberries in Dairy Products

As the functional beverage market continues its double-digit growth, the dairy industry has been able to latch on to the rise and offer numerous products in the same niche. Drinkable yogurt beverages are a standout among the healthy dairy beverages being offered today, but there is still an exceptional amount of new product development that can occur if dairy manufacturers continue to capitalize on existing product trends.

Smoothies, shakes and



Industrial dairy formulations using red raspberry juice concentrate enable manufacturers to take advantage of the rapidly growing market for dairy- and soy-based nutritional drinks.

other functional drinks have been dominated by soy protein-based beverages, but the dairy industry is beginning to take advantage of the opportunities present. Most of the new functional dairy beverages are still relatively mainstream, such as fortified milk beverages. Blended fruit drinks, high protein beverages and mood-enhancing herb drinks can move the dairy industry away from simply offering flavored milks and into an entirely new category. The dairy industry is beginning to develop new healthy, functional beverages, and blends with red raspberries and other fruits have helped position dairy products as market leaders.

Formulating yogurt drinks

The red raspberry drinkable yogurt products developed by the Washington Red Raspberry Commission use a plain cultured milk base, and after shearing it, a stabilizer is added, along with red raspberry juice concentrate, flavors and sweetener. These products maintain a smooth mouth-feel and texture, with a distinct red raspberry flavor but no



Red raspberries and yogurt are a healthy way to start the day.

identifiable fruit. This increases the consumer perception and acceptability of the product.

Some drinkable yogurts are manufactured as a single fermented product with flavoring added post-fermentation. Red raspberry juice concentrate has such a distinct, natural flavor that the addition of artificial flavors is not needed in products of this type. Consumer testing of these products indicates that the natural flavor provided by the juice concentrate was rated as exceptional when compared to similar products using natural and artificial flavors.

Red Color Proven Indicator for Human Health

Scientific research suggests that the colorants called anthocyanins in strong-colored berries like red raspberries, blueberries and blackcurrants may have a role in preventing heart disease. A three-year European-funded collaborative research project, that started in 2000, is currently investigating the functional properties of anthocyanins and anthocyanin-rich food ingredients and their influence on heart disease.

The researchers expect to develop improved techniques to increase the phenolic content in red berry juice and new anthocyanin-rich functional food recipes, and to provide a new insight into the potential actions of dietary anthocyanins in preventing heart disease.

Results so far reveal that new methodologies in red berry juice processing increase the anthocyanin content, and that these compounds may be used as colorants, said Dr Marina Heinonen from the Department of Applied Chemistry and Microbiology in Finland, and coordinator of the project.

Future applications of the project's results could include the production of red berry juices as a healthy alternative to red wine for dietary protection against heart disease and the

optimal use of anthocyanins as natural food ingredients and food additives (colorants). The scientists also suggest that research could lead to the development of anthocyanin-rich functional foods using the peeling waste of fruit and vegetables from food industry.

Better Red, Than Bland

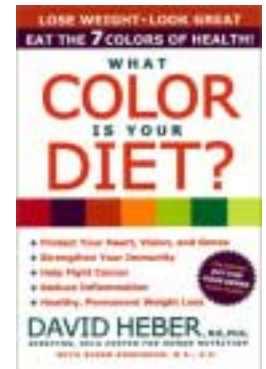
New Diets Tout Role of Colors in Choosing the Right Foods^{i, ii, iii}

According to several new diet plans published within the past year,

medical researchers are convinced that people consume foods that were never intended for human consumption based on genetic

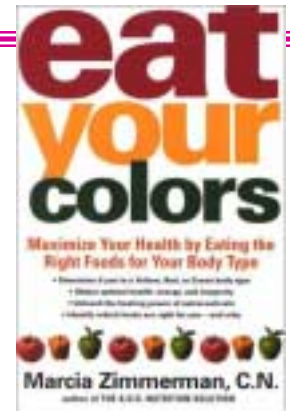
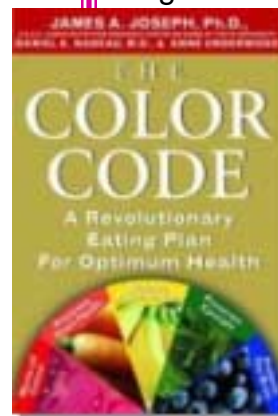
makeup. Major diseases, these authors say, are caused by the imbalance between what we eat and our DNA. Humans should break from the "typical" brown and beige American diet of meat and starches and adapt a more colorful diet more heavily weighted with fruits and vegetables. Understandably, red raspberries will offer a

colorful addition to any color-based diet, but here's what these popular authors say:



Eat Your Colors by Marcia Zimmerman, C.N.

- "Berries are a good source of fiber which is a known chemopreventative agent."



The Color Code: A Revolutionary Eating Plan for Optimum Health, by James Joseph, Tufts University

- "Red = Berries = Fight Arthritic Pain"

What Color is Your Diet? The 7 Colors of Health by David Heber, M.D. of the UCLA Center for Human Nutrition

- "red berries contain ellagic acid...which prevents the binding of carcinogens to DNA."

Research Indicates Freezing Has No Effect on Antioxidants

Red raspberries are a rich source of vitamin C and phenolics, most notably, the anthocyanins. Anthocyanins are present together with flavonols and ellagic acid, all of which are a source of health for the body.

For manufacturers who are interested in making products that improve human health and fight disease, developers need to be certain that phytochemicals are not lost during the processing of the fruit.

Recent research indicates that the antioxidant capacity of red raspberries, particularly the levels of vitamin C and phenolics were not affected by freezing. Anthocyanin levels

were unaffected and overall, there was no effect on the antioxidant capacity of the fruit. It is concluded, therefore, that freshly picked, fresh commercial, and frozen raspberries all contain similar levels of phytochemicals and antioxidants per serving.^{iv}



Heat Treatment Increases Health Benefit of Raspberry Products

Ellagic acid is a phenolic compound that has become known as a potent anti-carcinogenic/anti-mutagenic compound. It also has anti-bacterial and anti-viral properties. The free radical scavenging activity of ellagic acid is well documented, and it is very effective in fighting disease.^v

Recent research identified how the heat processing used to make jams had a positive impact on raspberry phenolics.^{vi} The ellagic acid derivatives remained

quite stable with processing and during 6 months of jam storage. The content of free ellagic acid increased 3-fold during the storage period. The initial content (10 mg/kg of fresh weight of raspberries) increased 2-fold with processing, and it continued increasing up to 35 mg/kg after 1 month of storage of

the jam. The increase observed in ellagic acid could be explained by a release of ellagic acid from ellagitannins with the thermal treatment.

For manufacturers

interested in manufacturing a broad range of chemopreventative food products, this news is well-received. Ellagic acid acts as a scavenger to "bind" cancer-causing chemicals, making them inactive. It inhibits the



ability of other chemicals to cause mutations in bacteria. In addition, ellagic acid from red raspberries prevents binding of carcinogens to DNA, and reduces the incidence of cancer in cultured human cells exposed to carcinogens.

Fighting Arthritis and Gout, the Natural Way

The pain experienced from arthritis and gout is the type of pain that most people just want stopped, fast.

They don't care how their medicine works, as long as it does work. However, many pain sufferers may not understand the chemical process that

allows their pain medication to work. The chemical processes could potentially cause red raspberries to become a natural pain "medication" for a new generation of pain sufferers.

Drugs such as aspirin and ibuprofen are called non-steroidal anti-inflammatory drugs (NSAIDs). They work by inhibiting two enzymes, cyclooxygenase I and II (popularly known as COX 1 and COX 2), which are produced by the body as a response to pain. NSAIDs prevent chemical messages from binding to cyclooxygenase. The normal messages are not delivered, so the body does not feel the pain and doesn't become inflamed.^{vii}

Unfortunately, many patients must take pain medication daily, which can cause numerous side

effects, including upset stomachs, vomiting, kidney damage and, possibly, ulcers. This is because NSAIDs inhibit both COX 1



The pain associated with arthritis and gout is relieved by the same anthocyanins found in red raspberries.

and COX 2, but the COX 1 enzyme is also important for maintaining normal cell function within several organs.^{viii}

Red raspberries contain compounds that function like NSAIDs and can block both COX enzymes. However, flavonoids can also protect against stomach damage, unlike their NSAID counterparts.^{ix} It is suspected that the high levels of antioxidants found in red raspberries provide a protective function and prevent unwanted symptoms. This makes concentrated red raspberry products superior to over-the-counter pain relief because raspberries block pain in the same manner and reduce potential side-effects.

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The Washington Red Raspberry Commission has news, recipes and new product information for consumers and industrial manufacturers about how to use red raspberries in the foods they make. Please visit our website www.red-raspberry.org for more information.



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