Health Benefits 101

A Glossary of terms used in discussing berries and human health

Nutrients - are chemicals in food that provide energy, structural materials and regulating agents **essential for life**. Nutrients come from both plant-based foods and animal-based foods. There are six classes of nutrients: proteins, fats, carbohydrates, vitamins, minerals and water.

Phytochemicals – non-nutritive chemicals found in plant-based foods that promote health and/or prevent chronic diseases such as cancer and heart disease. The prefix "phyto" means *plant*- so the simplest translation of the word "phytochemical" is *plant chemical*. Phytochemicals are not nutrients since they are not essential for life. Some common phytochemicals are phenolic acids, flavonoids, terepenes and phytosterols.

The phrase "nutrients and phytochemicals" is one way to refer to the substances found in fruits and vegetables. The following words are also used.

Antioxidants – nutrients or phytochemicals that work to "sponge up" free radicals preventing them from doing harm to the body. Free radicals are normal by-products of metabolism; in excess, they can damage the DNA of the cells. Vitamin C, Vitamin E, carotenoids and flavonoids are all examples of antioxidants.

Phenolic Acids – phytochemicals, such as ellagic acid and salicylic acid, work as potent anti-carcinogens by binding cancer-causing chemicals found in the body making them inactive.

ORAC – stands for "Oxygen Radical Absorption Capacity". It is a one testing method that measures the ability of a substance to sponge up free radicals. It is often used as a measure of the antioxidant level of a substance.

Anthocyanidins – a group of flavonoid phytochemicals that act as powerful antioxidants in the body. Some anthocyanins give berries their deep red or purple color.

Catechins – are flavonols (phytochemicals) that support the antioxidant defense system. The catechins found in berries are similar to the ones found in green tea that are known to contribute to cancer prevention.

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Quercetin - a flavonol (another group of flavonoid phytochemicals) that works as both an anti-caricinogen and an antioxidant. Helps protect against cancer and heart disease.

Dietary Fiber – a type of carbohydrate (nutrient) that has several functions. It maintains a healthy GI tract, helps prevent several types of cancers and can lower " bad" cholesterol and reduces the risk of heart disease.

Vitamin C – or ascorbic acid, is a water-soluble vitamin (nutrient) that functions as a very powerful antioxidant.. Vitamin C "sponges up" free radicals and prevents them from doing harm.

Gallic Acid –a polyphenolic that is a powerful antioxidant, working to stop free radical damage to cells. Gallic acid is also found in black tea and red wine where tests showed that it inhibited cell proliferation and apoptosis (cell death) in prostate cancer cells.

Rutin – a bioflavonoid (a group of plant polyphenolics) that helps in promoting vascular health and works as an antioxidant to help prevent cell proliferation associated with cancers. Works as an anti-inflammatory and has anti-allergenic properties.

Salicylic Acid – may prove to have the same protective effect against heart disease as aspirin. The therapeutic effects of small daily doses of aspirin to inhibit arteriosclerosis suggest that salicylic acid consumed in foods may provide a similar benefit.