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SURVEY AND DOCUMENTATION OF ANTIOXIDANT –RICH FRUITS

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ABSTRACT

Antioxidant constituents of the plant material act as radical scavengers, and helps in converting the radicals to less reactive species. They are an inhibitor of the process of oxidation, even at relatively small concentration and thus have diverse physiological role in the body. A variety of free radical scavenging antioxidants is found in dietary sources like fruits, vegetables etc. Antioxidants are increasingly important additives in food processing. Their traditional role is, as their name suggests, in inhibiting the development of oxidative rancidity in fat-based foods, particularly meat and dairy products and fried foods. Recent research has suggested a new role in inhibiting cardiovascular disease and cancer. This paper presents survey and documentation of antioxidant –rich fruits and is an sincere attempt to generate interest among the masses regarding its immense potential in preventing and treating several common diseases.

KEYWORDS: Antioxidants, Aging, Free radicals, fruits and Vitamins.

INTRODUCTION

Natural antioxidants present in foods and other biological materials have attracted considerable interest because of their accepted safety and potential nutritional and therapeutic effects. Because extensive and expensive testing of food additives is required to meet safety standards, synthetic antioxidants have generally been eliminated from many food applications. The increasing interest in the search for natural replacements for synthetic antioxidants has led to the antioxidant evaluation of a number of plant sources. Antioxidants that have traditionally been used to inhibit oxidation in foods also reduce dreaded free radicals and stop oxidation chains in-vivo, so they have become viewed by many as nature's

answer to environmental and physiological stress, aging, atherosclerosis, and cancer. Natural antioxidants occur in all parts of plants. These antioxidants include carotenoids, Vitamins, phenols, flavonoids, dietary glutathione, and endogenous metabolites. [1] Plant-derived antioxidants have been shown to function as singlet and triplet oxygen quenchers, free radical scavengers, peroxide decomposers, enzyme inhibitors, and synergists. [2] The most current research on antioxidant action focuses on phenolic compounds such as flavonoids. Fruits and vegetables contain different antioxidant compounds, such as vitamin C, vitamin E and carotenoids, whose activities have been established in recent years. Flavonoids, tannins and other phenolic constituents Present in food of plant origin are also potential antioxidants. [3, 4] These components include: Nutrient-derived antioxidants like ascorbic acid (vitamin C), vitamin E, carotenoids, and other low molecular weight compounds such as glutathione and lipoic acid.

Antioxidants are believed to play a very important role in the body defense system against Reactive oxygen species (ROS), which are the harmful byproducts generated during normal cell Aerobic respiration. [5] Increasing intake of dietary antioxidants may help to maintain an adequate antioxidant status and, therefore, the normal physiological function of a living system. [6] To protect the cells and organ systems of the body against reactive oxygen species, humans have evolved a highly sophisticated and complex antioxidant protection system. It involves a variety of components, both endogenous and exogenous in origin, that function interactively and synergistically to neutralize free radicals. In a biological system they may protect cells from damage caused by these unstable molecules known as free radicals. Antioxidants terminate these chain reactions by removing free radical intermediates, and inhibit other oxidation reactions by being oxidized themselves. As a result, antioxidants are often reducing agents.

Antioxidants are intimately involved in the prevention of cellular damage - the common pathway for cancer, aging, and a variety of diseases. Several berries, fruits, nuts, seeds, vegetables, drinks and spices have been found to be high in total antioxidants. The body relies on obtaining its anti-oxidants from food and other supplements. In view of the immense medicinal importance it’s an effort to compile all the information on review of antioxidant rich fruits.

Role of Antioxidants

- Destroying the free radicals that damage cells.
- Promoting the growth of healthy cells.
- Protecting cells against premature, abnormal ageing.
- Help fight age-related macular degeneration.
- Provide excellent support for the body's immune system.
- Used as food additives to help guard against food deterioration.

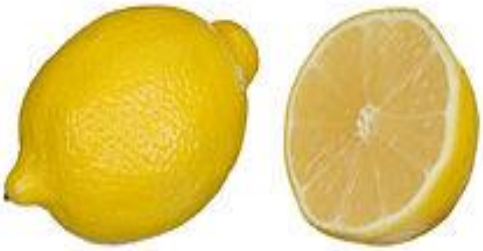
Food sources of antioxidants: Plant foods are rich sources of antioxidants. They are most abundant in fruits and vegetables, as well as other foods including nuts and wholegrain

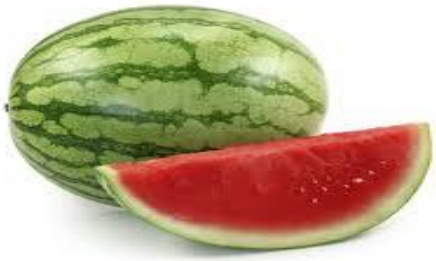
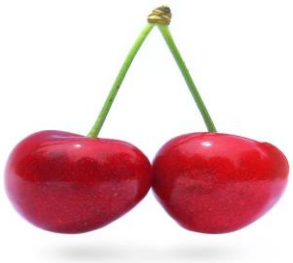
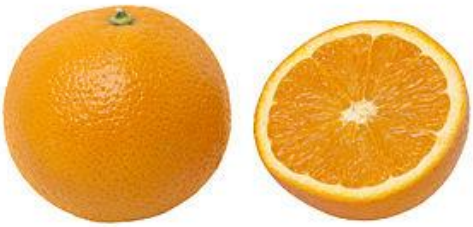
- Vitamin C Fruits (especially citrus) and vegetables, including green and red peppers, tomatoes, potatoes, and green, leafy varieties (eg, spinach and collard greens).
- Vitamin E Vegetable oils (e.g., soybean, corn, and safflower) and vegetable oil products (eg, margarine), whole grains, wheat germ, nuts and seeds, and green, leafy vegetables.
- b-Carotene Yellow-orange fruits (eg, cantaloupe) and vegetables (eg, carrots) and green, leafy vegetables.
- Polyphenolic antioxidants Tea, coffee, soy, fruit, olive oil, chocolate, cinnamon and red wine.
- Anthocyanins – eggplant, grapes and berries
- Flavonoids – tea, green tea, citrus fruits, red wine, onion and apples
- Isoflavonoids – soybeans, , lentils, peas
- Lycopene – tomatoes, pink grapefruit and watermelon
- Vitamin A –sweet potatoes and carrots

Some common Antioxidants: There are a hundreds of antioxidants of natural and synthetic origin. The interest of such compounds is due to their effective role against the destructive actions of free radicals. Some common antioxidants are as follows:

- Vitamin E
- Ascorbic acid (Vitamin c)
- Carotenoids and Flavonoids
- Isoflavones
- Anthocyanin
- Vitamin C

List of Fruits rich in antioxidants

1	**Common Name: Papaya** **Scientific name: *Carica papaya* L.** **Family:Caricaceae** 	2.	**Common Name:** Apples **Scientific name:*Malus domestica* Borkh.** **Family: Rosaceae** 
3.	**Common Name:** Guava **Scientific name:*Psidium guajava* L.** **Family:**Myrtaceae 	4.	**Common Name:** Avocado **Scientific name: *Persea americana Mill.*** **Family:** Lauraceae 
5	**Common Name:** Peaches **Scientificname: *Prunus persica* L.** **Family: Rosaceae** 	6.	**Common Name:** Lemon **Scientific name: *Citrus limon* L.** **Family:Rutaceae** 
7	**Common Name:** Pear **Scientific name: *Pyrus Sps*.L.** **Family:Rosaceae** 	8.	**CommonName:**Tomato **Scientificname:*Solanum lycopersicum* L.** **Family:Solanaceae** 

9	**Common Name:** Pomegranate **Scientific name:*PunicaGranatum* L.** **Family:Myrtales** 	10	**Common Name:** Water melon **Scientific name:*Citrulus lanatus.* Thunb** **Family:Cucurbitales** 
11	**Common Name:** Cherries **Scientific name:*Prunus avium* L.** **Family: Rosaceae** 	12	**Common Name: Plums** **Scientific name:*Prunus sps.* L.** **Family: :Rosaceae** 
13	**Common Name:** Pineapple **Scientific name: *Ananus comosus* L.** **Family:Bromeliaceae** 	14	**Common Name:** Orange **Scientific name: *Citrus sinensis* L.** **Family:Rutaceae** 
15	**Common Name:** Walnut **Scientific name:*Juglans regia*** **Family:** 	16	**Common Name:** **Scientific name:** *Vaccinium oxycoccos* **Family:** 

17	**CommonName:Amala** **Scientificname:*Phyllanthus emblica* L.** **Family:Phyllanthaceae** 	18	**Common Name: Passion fruit** **Scientific name:*Passiflora edulis* S.** **Family:Passifloraceae** 
19	**Common Name: Kiwi** **Scientific name: *Actinidia deliciosa* (A Chev)** **Family:** Actinidiaceae. 	20	**Common Name:** gooseberry **Scientific name: *Ribes-uva cripsa* L.** **Family:Grossulariaceae** 

CONCLUSION

Antioxidants are emerging as prophylactic and therapeutic agents. Several antioxidants have been found to be pharmacologically active as therapeutic agents for several diseases. These agents are used as nutritional supplements for certain diseases along with mainstream therapy. Plant foods are rich sources of antioxidants. They are most abundant in fruits and vegetables, as well as other foods including nuts and wholegrain.

Fruit should be an important part of our daily diet. They contain vitamins and minerals, and plant chemicals called phytochemicals. Fruit can help to protect the body against some diseases including diabetes, stroke, heart disease, some cancers and high blood pressure or hypertension. Many people do not eat enough fruit. Fruits and vegetables contain many vitamins and minerals that are good for your health. These include vitamins A (beta-carotene), C and E, magnesium, zinc, phosphorous and folic acid. Folic acid may reduce blood levels of homocysteine, a substance that may be a risk factor for coronary heart disease. Insight of consumption of fruits originated antioxidants are rather enormous but up to now little recognized. The research accomplished indicated the fruit are potential source of natural substances with antioxidant properties. It was demonstrated that among numerous

already identified polyphenols compounds, tannins constitute an essential fraction in the peels and seeds of fruits. In many cases, the fruit seeds and peels are the waste products of technological processes, hence their re-using as the antioxidant source, could bring measurable economical profits and contribute to reduction of pollutions introduced by fruit and vegetable industries into the environment. It is necessary to consider both environmental (waste management, protection against pollution) and economical aspects (extraction profitability). Concluding, it should be stressed that the many fruits can be considered as a potential source of different antioxidant components, which are not exploited at the moment, but could find practical application and can be the best source of antioxidants.

From the above it is also learnt that fruits belonging to Family Rosaceae and Rutaceae Family (Citrus Fruits) are mainly characterized by antioxidant properties.

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