ENHANCING THE ANTI-OXIDANT INTAKE IN FAMILY DIET AS A TOOL TO ENSURING HEALTHY LIVING

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ABSTRACT
Anti oxidants are commonly found in fruits and vegetables and they function chiefly as organic catalysts in the hormones to aid metabolic process, word-off free radicals that damage the body cells and boost immunity. The family diet being a major tool to ensuring good health status of family members should ensure adequate anti- oxidants food sources as components of their regular diet. This study looked at sources and functions of anticidents and suggested various ways of enhancing anti-oxidant rich food intake a the family level for healthy living.

Food contains chemicals called nutrients and each nutrient have their basic function in the body. However, food nutrient are generally grouped into two, namely macro nutrients and micro nutrient (Olusanya, 2006). When food is consumed, the nutrient content of the food is converted through catabolic processes to produce energy and other nutrient values of the food (Whitney,2002). The catabolic reaction involves the breaking down of nutrient molecules in the cells by adenosine – triphosphate (ATP) and oxygen in the cell to produce energy (Whitney). When this chemical reaction takes place, free radicals are created. Free radicals are chemical substances that had lost one or more electron and has the potential to damage the body cells (Nacy, 2007). Free radicals are very corrosive to the body cells and often cause serious damages like cancer; aging related deterioration, clouding of the lens, among others (Nacy,2007). Anti-oxidants are chemical substances in food that prevents free radicals from damaging the body cell (Zelda) . Free radicals are molecules with one or more unpaired electron, they are by- products of normal body process involved in the catabolism of oxygen for energy (Whitney 2002). When cells burn oxygen, they create free radicals. Environmental pollution, radiation and ultra – violent light can also cause free radical to form in human body. Free radicals damages the body cells by depriving them of an electron as the free radicals seeks out and take the electron from the body cells to become stable (Zelda, 2003). Anti- oxidant prevents free radicals from damaging the body cells by donating an electron to the cell, thereby stabilizing the free radicals (Zelda, 2003). When anti-oxidants lose an electron, it remains stable and does not become a free radical itself.

FOOD SOURCES AND FUNCTIONS OF ANTI-OXIDANTS.

Anti-oxidants are common components of micro nutrients. Their major food sources are fruits and vegetables (Fatloss, 2008). A handful of fruits and vegetables in the family diet can supply anti-oxidant to the body. The fruits and vegetables include those that are rich in;

* **Carotene and Caroteniods**:

A good examples are paw-paw; orange, carrot, water melon, pink grape and spinach among others (Whitney, 2002). Caroteniods are the bright coloured pigments in plants that typically causes fruits and vegetable to appear orange, deep yellow, red and dark green which also contains coroteniod that are hidden by the green part of plants chlorophyll. When Beta Caroteniod is consumed, it is converted to vitamin A in cryptotaxanthin lycopen, Lutein and Zeaxanthin; because caroteniod are fat soluble (Fatloss, 2008) Beta Caroteniods are stored in the fat cells of the body and it helps fight free radicals in Lipids in the fats cells of the body (Nacy 2007).

Vitamin C

Vitamin C is another class of anti-oxidant that is obtained from citrus fruits, such as oranges; pineapples, tangerine, grape fruits and tomatoes among others. Vitamin C functions as anti-oxidants that protect the body in similar fashion like Beta caroteniod (Fatloss, 2008). However, vitamin C helps ward-off free radicals from body fluids such as blood rather than fat tissues (Fatloss, 2008)

Vitamin E.

Vitamin E is another anti-oxidant obtained from avocado; egg plants, pears, melon seeds, banana and cauliflower among others. Vitamin E anti-oxidant help to prevent the oxidation of low density Lipo-protein (LDI) cholesterol; the so called "bad" cholestered that cause plaque build-up in the arteries and cells membranes by stopping the free radicals chain creation process (Zelda, 2003).

Lycopen. From tomatoes; pepper, apricots, pink grapes fruits and carrots among others; are also important anti-oxidants that help boost the human immunity by neutralizing free radicals.

In a nutshell, fruits and vegetable supply the body anti-oxidants that helps prevent free radicals from damaging the body cells by donating electron to the free radicals to stabilize them and prevent damages such as;

i. Age – related deterioration (Wrinkles of the skin , grey hair etc).
ii. Heart diseases
iii. Cataracts (clouding of the eyes lens)
iv. Cancer, diabetes, cardiovascular diseases, and
v. Shield the things from damages in patient with silicosis which results from exposure to crystalline silicate (Zelda 2003).

ENHANCING ANTI-OXIDANTS IN THE FAMILY DIET AS TOOL TO ENSURING HEALTH LIVING

Food continues to play a major role in the life and health status of an individual right from conception till death (Whitney, 2002). All humans depend on food nutrients for sustenance and maintaining good health as well as promoting longevity (Carol, 1997). Carol (1997) also argued that 75% of human diseases results from food consumed, 17% from hereditary while the remaining 7% is unknown. This assertion implies that if humans can consume healthy diet, they have 75% the chances of remaining healthy throughout their life time. However, unfortunately people of all ages fall sick from time to time and many of these disease are nutrition related problems (Wiltington, 2007). Foods affect people in so many ways because it is the body's main source of nutrients and energy. The nutrients in foods are the chemical substances that build and renew all parts of the body each day. Food nutrient provides energy needed as well as replace worn out tissues, build up muscles, cells and organs of the body (Wiltington, 2007). However, these food nutrients as earlier said are grouped into two, namely macro nutrients which provides mainly energy to the body. Macro - nutrients needs the assistance of the micro nutrients to completely digest and be efficiently utilized in the body (Whitney 2002). It implies that a diet void of micro nutrients will only provide the body energy and for the energy to be completely liberated through the process of catabolism, the body cells have to burn oxygen thereby creating high volume of free radicals in the cells (Zelda, 2003). Macro-nutrient contain foods are often referred to as empty calories; because they only provide the body with energy at the expense of vitamins, minerals and proteins (Whitney, 2002). While nutrient dense foods are foods that provide substantial amount of vitamins, minerals, proteins and relatively low in calories (Fatloss, 2008). Jennine (2006) also defined nutrient dense foods as a ratio of the nutrient composition of a given food in relation to amount required by the human body to remain healthy. Therefore the nutrient dense foods is a diet or meal that decipher a complete nutrition package that can maintain good health. Family food providers therefore must ensure that food substances that contain anti-oxidants (Fruits and Vegetables) is given a priority in the family dietary practices. Gerger (1998), headed a team of researchers who investigated the importance of fruits and vegetable nutritive values to maintaining good health and stated in their conclusion that fruits and vegetables nutritive values could prevent and cure chronic diseases, especially non communicable diseases that have nutritional under tone. Food and Agricultural Organization (FAO, 2005) identified fruits and vegetables as functional foods; and launched fruits and vegetable consumption awareness programme that advocated for five servings per day. The campaign team specified the quantity that make up a serving and how to chose from different varieties of fruits and vegetables especially from those rich in vitamin C, A and fiber. A serving is equivalent to;

* one medium fruit or ½ cup of cutup fruits.
* ¾ cup (180 lit) of 100% juice
* ¼ cup of dried/fresh nuts
* ½ cup of raw leafy or cooked vegetable
* ½ cup of fruits or vegetable salad

Sources: F.A.O (2005).

The integration of fruits and vegetables into the family diet as a major source of anti oxidants can not be over emphasized, as anti-oxidants function as co-enzymes in the processes of complete digestion and utilization of macro nutrients the body. Anti-oxidants also helps to stabilize free radicals that result from the ATP process as well as boost the immune system (Nacy,2007). Loeva (2003); gave a summary of the consequences of diets rich in macro-nutrient (carbohydrates, fats and oil) that they have high glycemic index and empty calories that supply mainly glucose to the body. Loeva (2003) summary includes;-

sugar, suppresses the immune system and help contributes to hyperactivity, anxiety, depression, concentration difficulties;

increase the delta, alpha and theta brain waves which alters the minds ability to think clearly;

Causes hyperglycemia;

Contributes to weakness of defense against bacteria infections;

Causes kidney damage;

Promotes tooth decay;

Contributes to diabetes, osteoporosis, cardiovascular diseases;

Over stress the pancreas;

Increase the amount of fats in the liver;

Causes hypertension and hormonal imbalance;

Causes head ache, including migraine.

Sugar can also increase bacteria fermentation in the colon.

Jennine (2006) conducted) studies on nutritive values of fruits and specified fruits and vegetables as the main food categories that could be employed to maintain consistent healthy status through out life. Examples of such fruits include. (Botanical names in brackets)

(1) Tomatoes (*cycopersium esculentum*) – Tomatoes is the major source of lycopene and vitamin C, antioxidants and anti-cancer agent that intervenes in the devastating chain reactions of oxygen free radical molecules.

(2) Spinach (*Spinacia oleracca*) – Spinach tops the list along with other green leafy vegetables as food mostly eaten by people who do not get cancer. Spinach is a supper source of anti-oxidant and cancer antagonist containing about four times more beta – carotene and three time more lutein than broccoli and it is also a rich source of fiber that helps lower blood cholesterol.

(3) Onion (*Alium cepa*) (including leeks), are exceptionally strong anti-oxidants that function as anticancer agents, it is the richest dietary source of quercetin (found in red and brown onion only), which has been specifically linked to inhibiting human stomach cancer, thins the blood, lower cholesterol, raises good – type high density lipoproteins (HDL) wards – off blood clotting in the blood vessels and also acts as anti-viral agent.

(4) Egg plants (*Solamium Melongena*) help lower blood cholesterol and counteract some detrimental blood effect of fatty foods. It also has anti-bacterial and diuretic properties.

(5) Cucumbers (*Cucumis Satiuns*) are the most cooling food, it helps counteract fevers, constipation, skin eruptions, high blood pressures, rheumatism, obesity, acidosis and it is also a mild diuretic.

(6) Chili pepper (*Capscum annum*) (tiny species pepper) help dissolved blood clots, opens up sinuses and air passages, breaks up mucus in the lungs, acts as an expectorants or decongestion agent, helps prevent bronchitis, emphysema and stomach ulcers.

(7) Carrots (*Daucus carota*) are super source of beta – carotenes, a powerful anticancer, artery protecting, immune boosting anti-oxidants with wide protective power. The high soluble fiber in carrot depresses blood cholesterol and promotes regularity of blood fat level.

(8) Cabbage (*Brassics oleracea*) contains numerous anti-cancer and anti-oxidant compounds. It speeds up estrogen metabolism. It helps block breast cancer, suppress growth of polyps, a prelude to colon cancer.

(9) Bell pepper (green) (*Caspicum anonum*) is rich in anti oxidant and vitamin C. It helps to fight cold, asthma, bronconhitics, respiratory infection cataracts of the eyes, muscular degeneration, angina, arteriosclerosis and cancer.

(10) Banana*(Musa species*) is rated one of the best snacks because of its low calorie, sodium and fats; and dense in all B complex calorie, folic acid and vitamin C calcium, magnesium, trace amount of iron and zinc . Banana is known for immediate relief to the individual that is suffering from hang

over, combine fresh banana, milk, non – fat frozen yogurt and honey to create a milkshake to ease head ache and re-hydrates the body.

CONCLUSION

Fruits and vegetables, though enlisted as micro-nutrient that the body require to function well is very important for maintenance of good health and proper functioning of body processes. They are the major sources of vitamins and minerals which function chiefly as organic catalysts both in the hormones to aid metabolical process, boost the immune system and ward-off free radicals. It has also been scientifically proven to prevent and cure diseases especially stress in human body and other non communicable diseases. It has also been proven to have anti-cancer properties.

RECOMMENDATION

The importance of ant-oxidants in the family diet is enormous, hence it is recommended that ;

(1) One of the family daily meals should contain vegetables or fresh fruits severed at the end of meal.
(2) Every member of the family should eat at least two or more varieties of fresh fruits daily.
(3) Meals rich in carbohydrate foods should be accompanied with fruits and vegetables salads.

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