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Ageing: A Problem of Modern Era and Its Solution

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ABSTRACT

Do we want to catch old age at earliest? Can we avoid ageing? In both cases, answer is 'No'. It is known to everybody that once a human is born, he has to cross childhood, youth and then old age, which is command and demand of time. But nowadays in maximum cases, the symptoms of old ages are knocking in young phase, which is not desirable to us. Ageing is a highly individualised phenomenon which can be classified chronologically (number of years lived), physiologically (age by body function) and functionally (ability of social contribution). There are two types of ageing; intrinsic ageing – age dictated by the genetic makeup and extrinsic dictated by lifestyle and environmental factors. Hair is also an important part for indicating age of a person. Healthy hair indicates health and youth. In order to delay ageing, we must pay attention to our daily diet to maintain our skin and hair. This paper aims to focus the causes of premature ageing and summarises some easily available fruits, vegetables, spices and other ingredients that have scientifically proven anti-ageing benefits.

Keywords: *Ageing, anti- ageing, causes of premature ageing, scientifically proven anti-ageing compounds*

INTRODUCTION

The aspiration for maintaining or recuperating a young-looking apearance focused by healthy skin and hair, despite of age is a multibillion dollar trade. Somehow, we always correlate the age and beauty of an individual, with the individual's skin and hair. The physiological functions and structures of organs within the skin constantly turn down with growing age. Dry skin, fine lines, deep wrinkles, enlarged pore, age spots, graying of hair and hair loss are all external indicator of ageing. We cannot stop ageing however there are ways to delay and reduce the natural skin ageing processes.

Facts - There are three factors in Ageing. These causes can easily be divided into three main categories; biological ageing, environmental ageing and mechanical ageing[1].

The first category, biological ageing, is often genetically determined- that occur naturally within the body. Changes associated with biological ageing are due to regular change in the stability of some hormones and messenger molecules are excreted by other glands and organs within the body. Many of these changes are genetically determined and cannot be stopped.

Next is environmental ageing, which occurs as a result of extrinsic sources in the environment, like daily exposure of trillions of free radicals from a variety of sources, the sun's Ultraviolet rays, pollution, smoke, harsh weather and external stress. These free radicals break lipids, proteins and DNA, which ultimately decline the proper functioning of cells and cripple the reliability of overall cell composition. Years of accumulation of environmental stress on cellular structures results in the premature ageing of the skin and premature graying of hair.

The third category of ageing, mechanical ageing is the consequence of constantly recurring wrinkle causing behaviours, muscle activities repeated regularly for year after year. Even though it is impractical to stay away from some wrinkle causing activities such as smiling and frowning, the following behaviours should be avoided to keep away from premature signs of mechanical ageing:

- Squinting
- The thinker posture (resting chin and cheek in the hand).
- Sleeping on your side or stomach.
- Scrubbing with hot water.
- Weight fluctuation.
- Unbalanced diet and lack of sleep.
- Pursing the lips while smoking or drinking from a straw.

DISCUSSION

Evidence of ageing- (a) Dry skin is a prominent sign of skin ageing. As we grow old, the skin produces fewer ceremides, lipids and fatty acids to seal the moisture barrier, resulting in an increase in transepidermal water loss and dryness. (b) A dull rough complexion is another visible sign of skin ageing. (c) Fine lines and deep wrinkles in the skin is a visible sign of ageing (d) Loss of firmness in the skin is another evidence of ageing. (e) Enlarged pores are also a sign of ageing skin. (f) Age spots are the last evidence of ageing.

The two main age accelerants – 1. Sweets, junk and processed foods and 2. UV – rays

Decelerator of ageing –organisms age because of the accumulation of free radical that damage over time[2]. A free radical is any atom or molecule that has a single unpaired electron in an outer shell[3]. While a few free radicals such as melanin are not chemically reactive, most biologically-relevant free radicals are highly reactive [4]. For most biological structures, free radical damage is closely associated with oxidative damage. Antioxidants are reducing agents, and limit oxidative damage to biological structures

by passivating them from free radicals[5]. in the Table – 1

The fruits having benefits of major anti-ageing activity are listed

Sl. No.	Fruit/ vegetable name	Type of Plant	Scientific name	Active (anti-ageing) species
1	Grapes	Fruit	Vitis vinifera	Stilbenes (resveratrol), Flavanols, Phenolic Acids, Carotenoids[6]
2	Oranges	Fruit	*Citrus Sinensis*	Anti-oxidants, Vitamin –C[7.]
3	Avocado	Fruit	Persea americana	Oleic Acid, carotenoid anti-oxidants lutein and zeaxanthin as well as vitamin E (tocopherol)[8].
4	Pecans	Fruit	Carya illinoinensis	Antioxidants[9].
5	Broccoli	Vegetable	Brassica oleracea var. italica	Lignans[10].
6	Cucumbers	Vegetable	Cucumis sativus	Silica, potassium, magnesium, and vitamin C, lignans[11].
7	blue Berries	fruits	Cyanococcus	• Antioxidants, Fiber, Vitamin C, • Vitamin K, • Manganese [12].
8	blackberries	fruit	Rubus Fruticosus	• phytochemicals including polyphenols, flavonoids,anthocyanins, salicylic acid, ellagic acid, and fiber. Anthocyanins[13.]
9	raspberries	fruit	Rubus idaeus	Antioxidant, vitamin C, manganese, fiber, copper, vitamin K, pantothenic acid, biotin, vitamin E, magnesium, omega-3 fats, folate, potassium[14].
10	strawberries	fruit	Fragaria ananassa	Antioxidant, K, Dietary fibre, Vit A, B, C[15].
11	Apples	fruit	Malus domestica	K, Vit A, C, pectin, Phytonutrients (antioxidants)[16].
12	Beans	Vegetable	Phaseolus vulgaris	Plant protein[17].
13	Eggs	animal cell	Gallus domesticus	Amino Acids, Na, K, Vit A, B12, D, Cholesterol[18]
14	Oats	Vegetable (source)	Avena sativa	Beta-glucan[19].
15	Red Wine	*Fruit Vitis vinifera (Source)*	*Vitis vinifera (Common grapes)*	Resveratrol[20].
16	Pomegranates	Fruit	Punica granatum	Vitamin C, K[21].
17	Pumpkin	Vegetable	Cucurbita maxima	Antioxidants[22].
18	Green Tea	Beverage (Plant source)	Camellia sinensis	Oligomeric proanthocyanidins (OPCs)[23].

19	Watermelon	Fruit	Citrullus lanatus	Citrulline, Vit A [24].
20	Tomatoes	Vegetable	Solanum lycopersicum	Lycopene, antioxidant, Vitamin C[25]
21	Brussels Sprouts	Vegetable	Brassica oleracea var. gemmifera	Vitamin C, K[26].
22	Honey	bees forageing nectar from flowers	Apis mellifera	Glucose Oxidase[27.]
23	Bananas	Fruit	Musa acuminata and Musa balbisiana	Assortment of Vitamins and Minerals[28].
24	Spinach	Vegetable	Spinacia oleracea	Polyphenols, Vitamin A, B6, C[29].
25	Almonds	Nut	Prunus dulcis	Vitamin E[30].
26	Salmon	Fish	Salmo salar	Omega-3s[31].
27	Oysters	Aquatic animal	Ostreidae	Zinc and Selenium[32].
28	Guava	Fruit	Psidium guajava	Vitamin A equiv. beta-carotene, Vitamin C[33].
29	Pineapple	Fruit	Ananas comosus	vitamin C and Potassium,
30	Papaya	Fruit	Carica papaya	vitamins A, C and E, antioxidants and minerals (especially potassium) [34].
31	Turnip	Vegetable	Brassica rapa subsp. rapa	Vitamin C, A [35].
32	Radish	Vegetable	Raphanus sativus	Vitamin C[36].
35	Neem	Vegetable	Azadirachta indica	flavonoids, amino acids and glycosides [37].
36	Mushrooms	Vegetable	Agaricus Bisporus	polyphenols and flavonoids[38].
37	Carrot	Vegetable	Daucus carota subsp. sativus	Vitamin A and C, beta - carotene
39	Sweet Potato	Vegetable	Ipomoea batatas	vitamin A, B and C, beta - carotene. [39]
40	Cauliflower	Vegetable	Brassica oleracea var. botrytis	Vitamin C, antioxidant (glutathione) [40].
41	Cabbage	Vegetable	Brassica oleracea var. capitata	antioxidant (glutathione), vitamin C, Polyphenols[41].
42	Garlic	Vegetable	Allium sativum	vitamin B, vitamin C and dietary fiber [42].
43	Onion	Vegetable	Allium cepa	vitamin B6 and C [43].
44	Ginger	Spice	Zingiber officinale	vitamin B6 and C [44].
45	Turmeric	Spice	Curcuma longa	Curcumin [45].
46	Cloves	Spice	Syzygium aromaticum	Antioxidants [46].

Regular ingestion of protein can uphold the growth of subcutaneous muscle and makes it chubby and supple which delays the ageing method. Meat and fish are good source of protein. Lean fish, which supplies omega 3 fats, is considered as anti-ageing diet[47]. With age, the body stops producing Coenzyme Q-10, which leads to a diseased heart. Over 50 years, for a healthy body, one pound of sardine fish, which provides 30mg of Coenzyme Q-10, is recommended as an anti-ageing dose[48] . Also vitamin B12, obtained from fish, chicken and diary products, has anti-ageing property[49]. A quantity of 500mcg-100mcg per day of any of it in older people is more appropriate for anti- ageing purposes. However, one should be aware of fishes containing mercury and pesticides.

A single true free range chicken egg contains essential amino

acids, highest quality proteins choline for brain, nervous and cardiovascular system and naturally occuring Vitamin D. However, there are critical nutritional differences between these eggs and commercially framed eggs. Allergic reactions to eggs are generally caused by the change that occurs in the cooking process. Raw egg eating helps to preserves many perishable nutrients. Raw egg white contains a glycoprotein called avidin that is effective to bind biotin (protein), a type of Vitamin B and cooking deactivates avidin. One can expect biotin (vitamin B7) deficiency from raw egg whites as it gets binded[50]. However, in nature the concentration of biotin is highest in egg yolks. Therefore, eating the whole raw egg, yolk and white doesnot lead to biotin deficiency[51].

Yogurt is rich in calcium and calcium is important component to prevent the age related problems of the intestine[52].

Glutathione is such an Antioxidant that Keeps All Other Antioxidants Performing at Peak Levels. Antioxidants are capable of eliminating free radicals from your body, which are very reactive particles and damages our cells finally leading to premature ageing[53].

Glutathione levels can be increased through whey protein intake which has to be extracted from grass fed organic cows. Many people believe that nuts are full of calories. However, nuts are a good source of essential omega 3 fatty acids. Especially walnuts are known for their anti-ageing properties and are a good source of minerals. Sprouts are rich in vitamins and minerals and contain easily absorbable hormones effective for anti- ageing. By increasing cereals intake in the daily diet such as whole grain, bailey, nuts, oats, and brown rice helps to have a healthier skin.

India Demographics Profile 2014[54, 55, 56].

Population	1,236,344,631 (July 2014 est.)
Age structure	0-14 years: 28.5% (male 187,016,401/female 165,048,695) 15-24 years: 18.1% (male 118,696,540/female 105,342,764) 25-54 years: 40.6% (male 258,202,535/female 243,293,143) 55-64 years: 7% (male 43,625,668/female 43,175,111) 65 years and over: 5.8% (male 34,133,175/female 37,810,599) (2014 est.)
Median age	total: 27 years male: 26.4 years female: 27.7 years (2014 est.)
Population growth rate	1.25% (2014 est.)
Birth rate	19.89 births/1,000 population (2014 est.)
Death rate	7.35 deaths/1,000 population (2014 est.)
Life expectancy at birth	total population: 67.8 years male: 66.68 years female: 69.06 years (2014 est.)

We have drugs that can prevent ageing (Anti-ageing drugs) and also the drugs which induces ageing. Some are discussed here[57]. Antioxidants are known experimentally for their effects on ageing in animals and it include at least four agents commonly available; vitamin E[58], BHT (Butylated hydroxytoluene)[59, 60].Ethoxyquin[61] and Nordihydroguaretic acid (NDHGA)[62]. All of these are available without prescription. Antioxidants were first suggested to act against ageing by Denham Harman, in 1961, and explored the relations between antioxidants and ageing by running several experiments. Several experiments have reported that vitamin E will increase life span of treated animals by about 10%; BHT has been reported to cause increase on the order of 30%, as has Ethoxyquin. NDHGA has also been reported to cause increase in life span. Still other reports have suggested that several antioxidants other than those listed will also cause increases. Vitamin E is easily available and widely taken. BHT, Ethoxyquin and NDHGA are industrial food additives added to foods to prevent spoiling. Lifespan increase can be caused at a much smaller dose by NDHGA than the other three[57]..

Since long many experiments have been done concerning defects in protein synthesis in cell, which causes ageing. The sulfhydryl drugs (SH-group drugs) are known to assist cell protein synthesis. Three SH-group drugs showed some ability to restore protein synthesis upto the levels close to those of their young animals. These three drugs are the amino acid cysteine[62], the radioprotective drug- mercaptoethylamine (MEA)[63] and the combination of folic acid and thiazolidine[64]. If MEA is added to the diet to treated mice, experiments show lifespan increases of 20 percent. Lifespan increase has been reported by the combination of folic acid and thiazolidine. It has evidence that thiazolidine when injected into aged mice will bring their cell enzyme levels closer to those of young animals. Cysteine can inhibit formation of amyloid fibrils, a process often happening with age. Hence, cysteine may be said to cause a partial rejuvenation.

The calcium salt of pantothenic acid, a vitamin, occurs commonly in foods of all kinds is Calcium pantothenate. In 1958 Williams and Pelton carried out lifespan test with calcium pantothenate on mice of both sexes[65]. They found a significant, 20% increase of lifespan in both male and female mice. The only problem was that it was done with a relatively small sample size. Still their statistics seemed sound. It is for information,

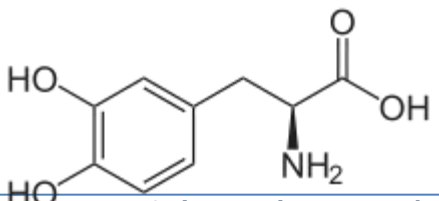
pantothenic acid is a major constituents of Royal Jelly, which bees feed the queen bee to make her a queen- and also make her live for as long as 8 years, much longer than worker bees. This motivated Williams and Pelton to try the effect of calcium pantothenate on mice and it worked.Pantothenate helps to withstand stress. Rats fed with calcium pantothenate in large doses could swim in cold water for 60 minutes compared to 30 minutes for control animals. Corticosterone and other hormones, formed in our adrenals, respond to stress, therfore helping us for a short period, however, have a long term negative effect. Calcium pantothenate acts as a substitute for corticosterone. It is observed that rats, whose adrenals had been removed, could still swim in cold water as long as normal controls could. As intolerance to stress is one major reason for ageing, such experiments with panthotenate acid can be a great success.

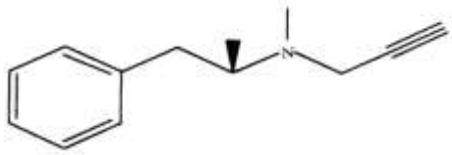
Pyridoxine (Vitamin B6) is a common vitamin in our food. In 1982, Miquel, Dictor, and Lindseth, working at NASA Ames, showed that pyridoxine would significantly increase the lifespan (only 11%) of a stained (C57BL6J 19) mouse which had shown no lifespan increase under antioxidant treatments, over control mice. The drug, Pyridoxine, was given to the late middle aged mice and the lifespan increase was reported as % of total lifespan. To have an increased lifespan, much larger doses would be needed, which could never be obtained from our food alone. However, no ill effects were found in humans that have taken as much as 1 gm/day[65].

Procaine was the first drug in modern times effecting ageing, reported in 1957. Although in 1934, McCay, showed by his experiments that ageing can be strongly affected by diet in mammals, but in 1957, Anna Aslan and her collaborators showed that Procaine could reverse the common symptons in the aged like the debility, arthritis, loss of hair and depression. In a study involving more than 1000 rats, Anna Aslan showed that procaine would increase the lifespans of male rats by 20% and female by 7%[65].

Deanol and Meclofenoxate are two closely related drugs which have been reported to affect ageing. Hochschild reported that both deanol and meclofenoxate can increase lifespans of treated mice by 30 to 50% over controls and Nandy reported that meclofenoxate if given 100mg/kg (about 33mg/kg deanol) per day for 30 months, 40 % of treated mice survived compared to 8% of controls. Nandy and Bourne have also shown meclofenoxate can decrease the age pigment lipofuscin in both aged animals and cell cultures. Using very much higher doses than Nandy or Hochschild, Harman reported a decrease in lifespans of treated animals if given an overdose of it for long term[65].

The drug deprenyl, by Somerset pharmaceuticals under the name of Eldepryl sold in the United States for treatment of Parkinson's disease and to treat memory loss in the aged, has also shown a significant effect upon longevity. In 1988, J. Knoll, a Hungarian physician, publised results showing deprenyl extended the lifespan of rats to maximum level. Two other research groups, one group of canadian scientists and the other an alliance of Japanese and Canadian researchers have independently verified that Deprenyl can increase lifespan indeed[65].





(*R*)(-)-deprenyl
(Selegiline)

In 1985, GC Cotzias, S. Miller and coworkers showed that levodopa or L-Dopa could increase the lifespan of rats by up to 50%. In their experiment, L-Dopa was fed to their experimental young rats at 40 to 80 mg per gram of their food. This might have increased lifespan[65].

The hormone melotonin, secreted by our pineal gland, plays a major role in setting our internal clock. Animals and human beings have an internal clock. This is a small gland underneath our brains, releases melatonin into our bloodstream according to a set schedule, with the greatest blood levels of melaonin occuring in the early phase and make less melatonin as we get older, with some older people making almost none at all. As a hormone, it affects many different organs, including our thymus (and therefore our immune system), our pituitary, and our hypothalamus – and through them virtually all our organs. W. Pierpaoli and others, in 1987 showed that small doses of melatonin will actually increase lifespan. In one case, after grafting pineal glands from young mice into old mice they found even greater increases in lifespan, by as much as 20%.

Let us now discuss little drug inducing ageing, which is equally important to know as their side-effects.

In Africa and low income countries, a class of anti-retroviral drugs commonly used to treat HIV, can cause premature ageing. The study shows that the drugs damage DNA in the patient's mitochondria.This may explain the reason, why HIV-infected people treated with antiretroviral drugs sometimes show advanced signs of ill-health and age-associated diseases such as cardiovascular disease and dementia at an early age.

Zidovudine, also known as AZT, is wellknown Nucleoside analogue reverse-transcrptase inhibitors (NRTIs) and is the first class of drug developed to treat HIV. They were a major breakthrough in the treatment of the disease, leading the condition to be seen as a chronic, rather than terminal condition, greatly extending lifespan. In Europe and North Amrica and high income countries, now the older NRTIs are less commonly used since if taken over a long period of time leads over toxicity and side-effects. However, in Africa and low income countries, the drugs have proved to be an important lifeline for people infected with HIV as they are now off-licence and hence relatively cheap.

Mitochondria provide energy to our cells to carry out their functions. These mitochondria acquire mutations during natural human ageing, though it is not certain that if these mutations are a cause of ageing or a consequence[66].

The researchers found that patients who had been treated with NRTIs had damaged mitochondria which resembled that of a healthy aged person even if the treatment was given decades before. Professor Chinnery explained that the DNA in our mitochondria gets copied through out our lifetimes and, as we age, it gets errors naturally and accordingly are copied with error. HIV drugs step up the speed at which these defects assemble up.

So over a period of ten years, a HIV infected person's mitochondrial DNA may have gathered the same amount of defects as that of a 20 or 30 years normally aged person. However, the patients who came off the medication many years before still may be vulnerable to these changes[66].

Diseases that are most often observed with increasing senescence are known as ageing- associated diseases. Age associated diseases are different from the ageing process itself because all adults animals grow old but it is not necessary that all aged animals will experience all age associated diseases. "Ageing – associated disease" mean "diseases of the elderly. It is not accelerated ageing diseases, all of which are genetic disorders. Some of the examples of ageing-associated diseases are atherosclerosis and cardiovascular disease, cancer, arthritis, cataracts, osteoporosis, type 2diabetes, hypertension and Alzheimer's disease. Some of these are discussed in short below[67].

Atherosclerosis is hardening of an artery specifically due to degenerative accumulation of lipid-containing plaques on the innermost layer of the wall of an artery. It can be understood only after severe narrowing of arteries to induce the symptom of other cardiovascular disorders such as stroke or heart attack. Tobacco smoking, accelerates the rate of deposition of it. However, iodine deficiency and hypothyroidism, elevates the formation serum cholesterol and of lipid peroxidation. High intake of saturated fat, trans fat, carbohydrate intake also have a worse effect on the easy flow of blood. Blood test indicating elevated serum levels of triglycerides +, homocysteine, uric acid (also responsible for gout), serum fibrinogen concentrations, serum lipoprotein (a) concentrations, Elevated serum insulin levels+ indicates Atherosclerosis. Often, short sleep duration, which is experienced in old age, may be one of the causes for this. It is also associated with long term exposure to inorganic arsenic.

Next we have almost 50% the elderly population are affected by arthritis which is a prime reason of disability. The reason can be any of the following like old injuries from playing on weekend, warrior or high school football game, and years of wearing high-heeled shoes. Prevention of arthritis are to avoid overuse, regular exercise rather than in weekends suddenly. But if there is pain, should stop. as in cardiovascular health, so also in arthritis, manageing body weight is an essential for healthy joints. The Framingham osteoarthritis study showed that the risk of developing osteoarthitis in the knees reduces by 50% with a weight loss of just 11 pounds[64].

Another important ageing-associated disease is Osteoporosis i.e., low bone mass affect adults of age 50 and more, mostly women. According to the National Osteoporosis Association, osteoporosis is not part of normal ageing. Healthy lifestyle, along with appropriate treatments can prevent or minimize the possibility of this suffering.

In a given year, more than one-third of adults of age 65years and older accidentally fall, out of which 20% to 30% suffer injuries that decrease mobility. Osteoporosis can be prevented by avoiding smoking, sodas, and alcohol intake, getting plenty of calcium, and limit foods with high acid content. Our bodies require calcium, and most of the time if it cannot be supplemented from our diet then it is satisfied by our bones. This is the reason why our women are especially prone for osteoporosis since they carry and deliver new born children; it takes a whole lot of calcium to develop a baby, and that calcium is taken from the mother's bones if she's not getting enough in her diet. Also adults in middle age need 1,000 to 1,200 milligrams of calcium daily. The sunshine vitamin, Vitamin D promotes calcium absorption and maintains adequate serum calcium and phosphate concentrations to enable normal mineralization of bone and to prevent hypocalcemic tetany[24]. Skin cancer is prevented by blocking UV rays by using sunscreen whereas the body needs sunrays to make vitamin D. Furthermore, the efficiency of making Vitamin D from sunlight by our body decreases with age. More than one-third of men and women in the 45 to 54 years age group are affected by Cardiovascular disease (CVD) affects and the incidence increases with age. The leading cause of death in the U.S.is Cardiovascular diseases, which are diseases of the heart or blood vessels. They include arteriosclerosis, coronary heart disease, arrhythmia, heart failure, hypertension, orthostatic hypotension, stroke, and congenital heart disease.

According to data from the Nurses' Health Study, a healthy lifestyle can reduce the risk of heart disease by as much as 80%. The researchers could show after 14 years of study that women who were not overweight, non- smoker, consumed not more than one alcoholic drink per day, exercised vigorously for 30 minuted or more per day, and ate a low fat, high fiber diet had the lowest risk for heart disease. Brangman that the high blood pressure patients should treat it to be under control as It can reduce the rate of stroke and heart attacks. People should choose the right medicine such that they have minimum side effects and also minimize salt intake to control high blood pressure.

Alzheimer's disease is the most common form dementia. There is no treatment for the disease, which worsens with the progress of time and age. It is diagnosed mostly in people over 65 years of age. In healthy older individuals, mental stimulation, exercise and a balanced diet have been suggested to delay cognitive symptoms (though not brain pathology), but there is no conclusive evidence supporting an effect.

Conclusion - From the review on ageing in India and from the basic and fundamental principle of ageing one can know that ageing is a natural phenomenon which no one can shut down but it can be slowed downed or delayed by changing the lifestyle or the way of living.

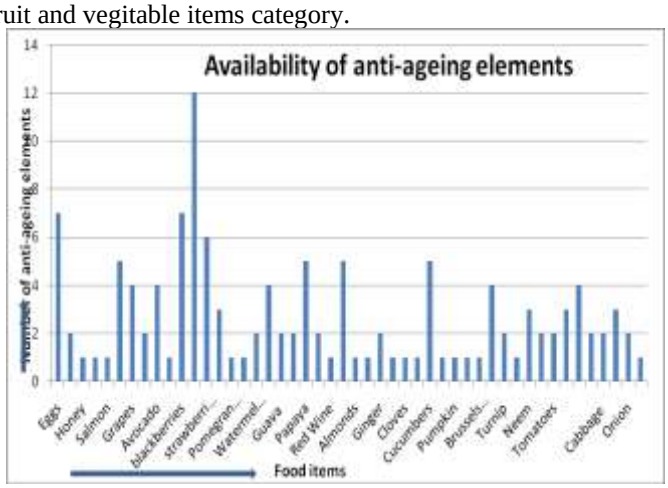
Many of the external causes of ageing are determined by the health and lifestyle decisions we make every day. Making unhealthy choices can cause prematurely ageing of the skin, and this makes us older faster, both internally and externally. In the present scenario, junk food is one of the major causes of premature ageing which characterized by the free radical accumulation in the body.

Diseases like cardiovascular diseases, cancer, diabetes, Alzheimer disease and cataracts can be reduced by the consumption of fruit, vegetables, and grains. These have been strongly related with the reduced risk of age related functional decline. This has been experimentally established by researchers all over the world.

In addition to this it has been proved in many cases of life and in studies that high level of fruits and vegetables consumption improves not merely physical health but also elevates life satisfaction, happiness, and mental stamina.

The above table depicts the number of available sources of food items with anti-ageing elements from different categories of food items. It is observed that the prevalance of anti- ageing elements in fruits and different types of vegetables are in abundant quantity than that of other available categories of food items and the two categories combined together dominates the all other

available categories combined together with respect to number of food items containing anti-ageing elements . The next category source with respect to number of food items containing anti-ageing elements is spice but with very less in size comparison to fruit and vegitable items category.



The above table depicts the prevalence of number of different types of anti-ageing elements in specific sources of food items. The food items like honey, green tea, salmon, pecans, pomegranates, orange, red wine, almond, wallnut, turmeric, clove, broccoli, beans, pumpkin, tomato, brussels sprout, raddish and oats contains only single number of anti-ageing elements and the remaning sources contains the multiple number of anti-ageing elements.The highest number of anti-ageing elements are found in raspberries followed by egg, blackberries and so on.

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