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Review Article

A REVIEW ON HERBS FOR ANTI-AGEING ACTIVITYAsra Jabeen^{1*}, Dr. S. Rani², Dr. Mohammed Ibrahim³, Abdul Saleem Mohammad⁴

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Abstract:

Ageing is among the greatest known risk factors for most human diseases representing accumulative changes in a human being encompassing physical, psychological and social changes. The drugs and interventions have been shown to retard or reverse the biological effects in animal models, but none has been yet been proven to do so in humans. The successful aging focuses on health and active participation in life, counters traditional conceptualization of aging as a time of disease and is increasingly equated with minimizing age signs on the skin, face and body. This review is to study the exceptional herbs that may act as natural anti-ageing which can be proven to be effective in long run.

Key words: *Anti-wrinkle, anti-ageing, ageing, anti-oxidants, herbs.*

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INTRODUCTION [1-5]:

Ageing or aging (see spelling differences), is the process of becoming older. The term refers especially to human beings, many animals, and fungi, whereas for example bacteria, perennial plants and some simple animals are potentially immortal. In the broader sense, ageing can refer to single cells within an organism which have ceased dividing (cellular senescence) or to the population of a species (population ageing).

In humans, ageing represents the accumulation of changes in a human being over time, encompassing physical, psychological, and social changes. Reaction time, for example, may slow with age, while knowledge of world events and wisdom may expand. Ageing is among the greatest known risk factors for most human diseases: of the roughly 150,000 people who die each day across the globe, about two thirds die from age-related causes.

The causes of ageing are uncertain; current theories are assigned to the damage concept, whereby the accumulation of damage (such as DNA oxidation) may cause biological systems to fail, or to the programmed ageing concept, whereby internal processes (such as DNA methylation) may cause ageing. Programmed ageing should not be confused with programmed cell death (apoptosis). Age can result in visual impairment, whereby non-verbal communication is reduced, which can lead to isolation and possible depression. Macular degeneration causes vision loss and increases with age, affecting nearly 12% of those above the age of 80. This degeneration is caused by systemic changes in the circulation of waste products and by growth of abnormal vessels around the retina. A distinction can be made between "proximal ageing" (age-based effects that come about because of factors in the recent past) and "distal ageing" (age-based differences that can be traced to a cause in person's early life, such as childhood poliomyelitis).

Ageing is among the greatest known risk factors for most human diseases. Of the roughly 150,000 people who die each day across the globe, about two thirds—100,000 per day—die from age-related causes. In industrialized nations, the proportion is higher, reaching 90%.

Life extension [6-11]

Life extension science, also known as anti-aging medicine, indefinite life extension, experimental gerontology, and biomedical gerontology, is the study of slowing down or reversing the processes of aging to extend both the maximum and average

lifespan. The ability to achieve this, however, does not currently exist.

Some researchers in this area, and "life extensionists", "immortalists" or "longevists" (those who wish to achieve longer lives themselves), believe that future breakthroughs in tissue rejuvenation, stem cells, regenerative medicine, molecular repair, gene therapy, pharmaceuticals, and organ replacement (such as with artificial organs or xenotransplantations) will eventually enable humans to have indefinite lifespans (agerasia) through complete rejuvenation to a healthy youthful condition. The ethical ramifications, if life extension becomes a possibility, are debated by bioethicists. The sale of purported anti-aging products such as supplements and hormone replacement is a lucrative global industry, with the US market generating about \$50 billion of revenue a year. The use of such products has not been proven to be effective or safe.

Anti-aging drugs [12-13]

There are a number of chemicals intended to slow the aging process currently being studied in animal models. One type of research is related to the observed effects of a calorie restriction (CR) diet, which has been shown to extend lifespan in some animals. Based on that research, there have been attempts to develop drugs that will have the same effect on the aging process as a caloric restriction diet, which are known as Caloric restriction mimetic drugs. Some drugs that are already approved for other uses have been studied for possible longevity effects on laboratory animals because of a possible CR-mimic effect; they include rapamycin, metformin and other geroprotectors. MitoQ, resveratrol and pterostilbene are dietary supplements that have also been studied in this context. Other attempts to create anti-aging drugs have taken different research paths. One notable direction of research has been research into the possibility of using the enzyme telomerase in order to counter the process of telomere shortening. However, there are potential dangers in this, since some research has also linked telomerase to cancer and to tumor growth and formation.

MECHANISM: [14]

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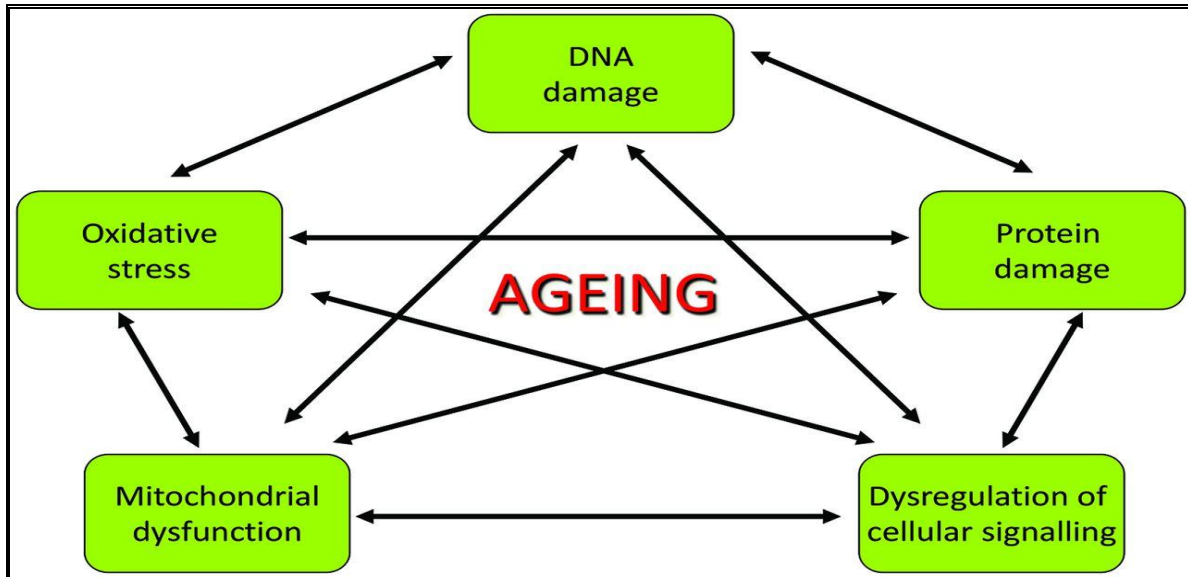


Fig 1: Mechanism of Ageing

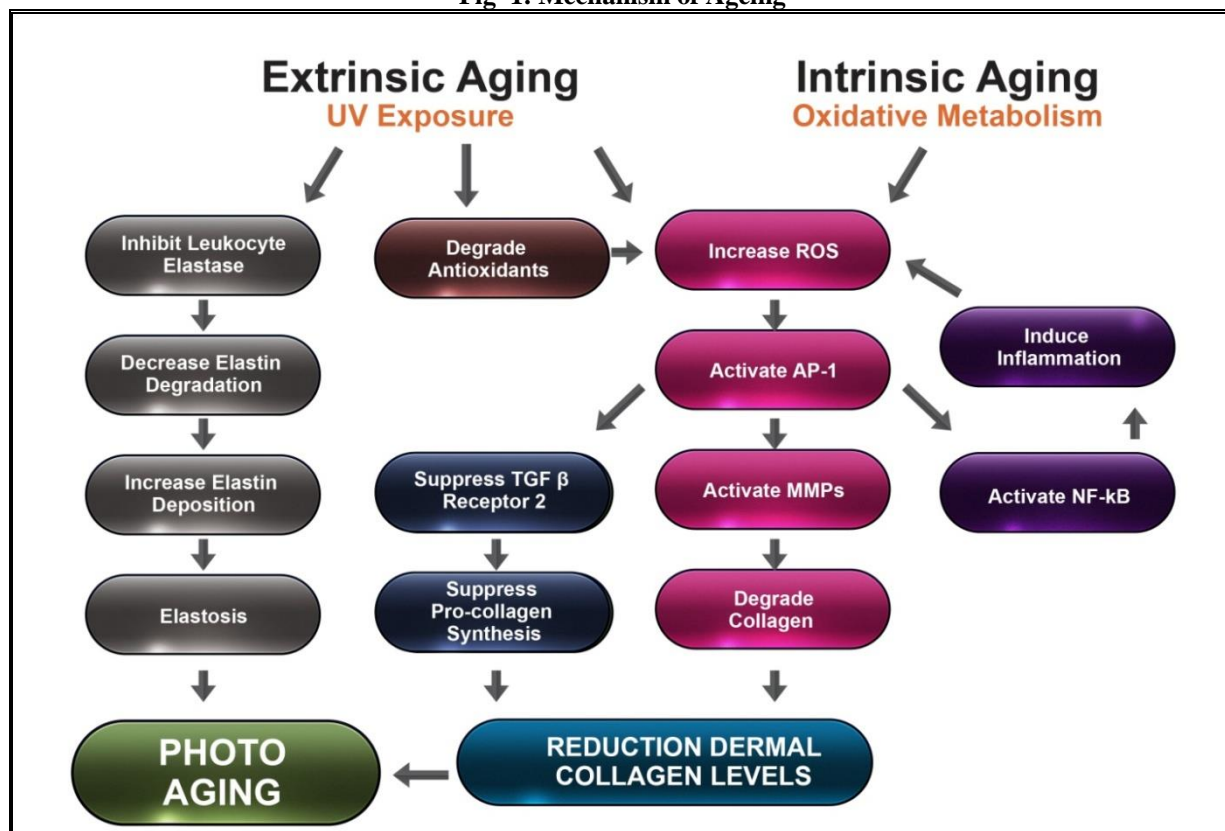


Fig .2: Types of ageing and the process of ageing

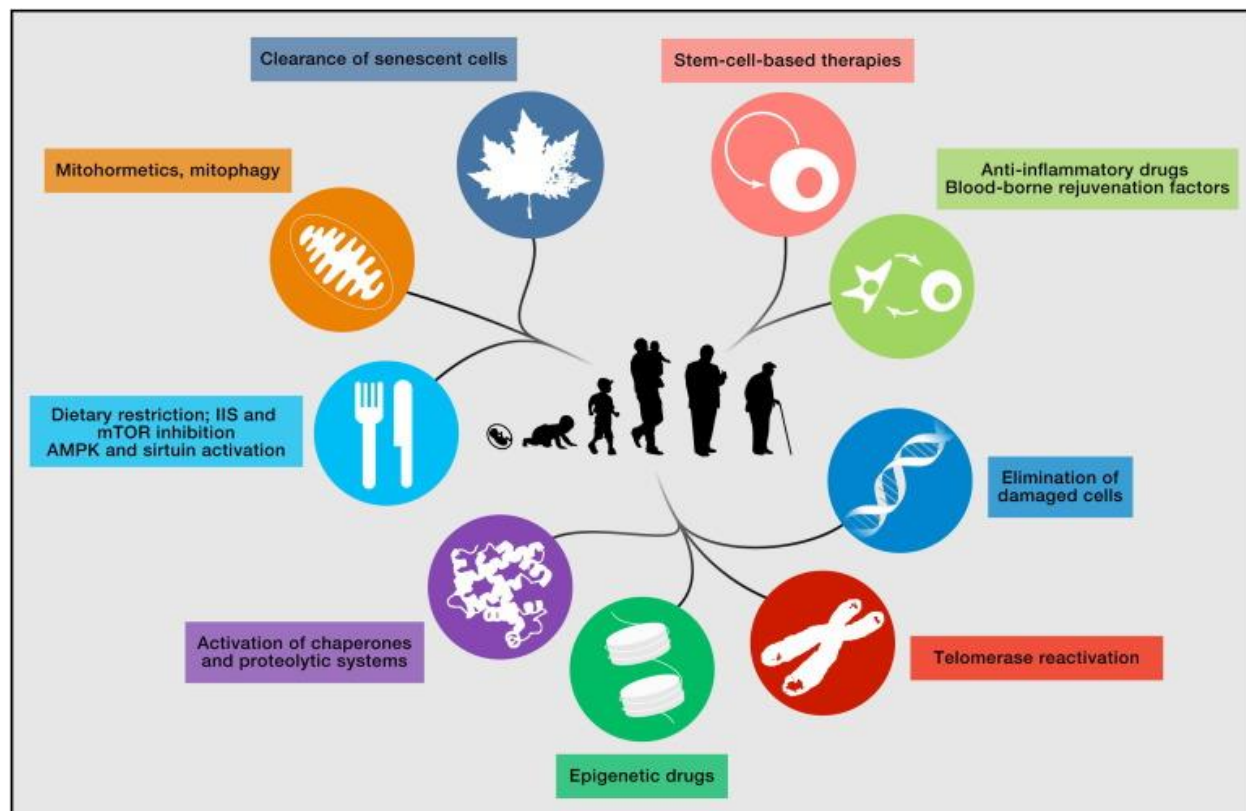


Fig 3: The process of Ageing.

List of Herbs:

Aloe Vera: [16]

It grows wild in tropical climates around the world and is cultivated for agricultural and medicinal uses. Aloe is also used for decorative purposes and grows successfully indoors as a potted plant.

It is found in many consumer products including beverages, skin lotion, cosmetics, or ointments for minor burns and sunburns. There is little scientific evidence of the effectiveness or safety of Aloe vera extracts for either cosmetic or medicinal purposes. Studies finding positive evidence are frequently contradicted by other studies.

Wheat: [17]

Consumed worldwide by billions of people, wheat is a significant food for human nutrition, particularly in the least developed countries where wheat products are primary foods. When eaten as the whole grain, wheat is a healthy food source of multiple nutrients and dietary fiber recommended for children and adults, in several daily servings containing a variety of foods that meet whole grain-rich criteria. Dietary fiber may also help people feel full and therefore help with a healthy weight. Further, wheat is a major source for natural and biofortified nutrient

supplementation, including dietary fiber, protein and dietary minerals.

Cucumber: [18]

Cucumber (*Cucumis sativus*) is a widely cultivated plant in the gourd family, Cucurbitaceae. It is a creeping vine that bears cucumiform fruits that are used as vegetables. There are three main varieties of cucumber: slicing, pickling, and seedless. Within these varieties, several cultivars have been created. In North America, the term "wild cucumber" refers to plants in the genera *Echinocystis* and *Marah*, but these are not closely related. The cucumber is originally from South Asia, but now grows on most continents. Many different types of cucumber are traded on the global market.

Haberlea Rhodopensis: [18]

Haberlea is a monotypic genus of flowering plants in the family Gesneriaceae. The only member of this genus, *Haberlea rhodopensis*, is endemic to several mountains in Bulgaria, especially the Rhodope Mountains, and small part of northern Greece. Common names include Orpheus flower and resurrection plant because of the remarkable ability of *Haberlea* to survive very long periods of desiccation.

Black Tea: [19]

Plain black tea without sweeteners or additives contains caffeine but negligible quantities of calories or nutrients. Some flavored tea with different herbs added may have less than 1 gram of carbohydrates. Black teas from the *Camellia sinensis* tea plant contain polyphenols known as thearubigins and theaflavins.

Meta-analyses of observational studies have concluded that black tea consumption does not affect the development of oral cancers in Asian or Caucasian populations, esophageal cancer or prostate cancer in Asian populations, or lung cancer.

Japanese Red Pine: [19-20]

Pinus densiflora, also called Korean red pine, [2] the Japanese pine or Japanese red pine, has a home range that includes Japan, the Korean Peninsula, northeastern China (Heilongjiang, Jilin, Liaoning, Shandong) and the extreme southeast of Russia (southern Primorsky Krai). This pine has become a popular ornamental and has several cultivars, but in the winter it becomes yellowish. The height of this tree is 20–35 m. The Japanese red pine prefers full sun on well-drained, slightly acidic soil. The leaves are needle-like, 8–12 cm long, with two per fascicle. The cones are 4–7 cm long. It is closely related to Scots pine, differing in the longer, slenderer leaves which are mid green without the glaucous-blue tone of Scots pine.

Nardostachys Jatamansi: [21]

Nardostachys jatamansi is a flowering plant of the honeysuckle family that grows in the eastern Himalayas, primarily in a belt through Kumaon, Nepal, Sikkim and Bhutan. The plant grows to about 1 m in height and has pink, bell-shaped flowers. It is found in the altitude of about 3000–5000 meters. Rhizomes (underground stems) can be crushed and distilled into an intensely aromatic amber-colored essential oil, which is very thick in consistency. Nard oil is used as a perfume, an incense, a sedative, and an herbal medicine said to fight insomnia, birth difficulties, and other minor ailments.

The chemical components of *Nardostachys jatamansi* have been assayed in a number of different studies. These compounds include: Acaciin, Ursolic Acid, Octacosanol, Kanshone A, Nardosinonediol, Nardosinone, Aristolen-9beta-Ol, Oleanolic Acid, Beta-Sitosterol.

Panax Ginseng: [22]

Ginseng has been used in traditional medicine for centuries; modern research is inconclusive about its biological effects. Preliminary clinical research indicates possible effects on memory, fatigue, menopause symptoms, and insulin response in people with mild diabetes. Out of forty-four studies examined between 2005-2015, twenty-nine showed positive, limited evidence, and fifteen showed no effects. As of 2017, there is insufficient evidence to indicate that ginseng has any health effects. Ginsenosides, unique phytochemicals of the *Panax* species, are being studied for their potential biological properties.

Citrus Sinensis: [23]

The orange fruit is an important agricultural product, used for both the juicy fruit pulp and the aromatic peel (rind). Orange blossoms (the flowers) are used in several different ways, as are the leaves and wood of the tree. The orange blossom, which is the state flower of Florida, is highly fragrant and traditionally associated with good fortune. It has long been popular in bridal bouquets and head wreaths. Orange blossom essence is an important component in the making of perfume. Orange blossom petals can also be made into a delicately citrus-scented version of rosewater, known as "orange blossom water" or "orange flower water". It is a common ingredient in French and Middle Eastern cuisines, especially in desserts and baked goods. In some Middle Eastern countries, drops of orange flower water are added to disguise the unpleasant taste of hard water drawn from wells or stored in qullahs (traditional Egyptian water pitchers made of porous clay). In the United States, orange flower water is used to make orange blossom scones and marshmallows. In Spain, fallen blossoms are dried and used to make orange tea. Orange blossom honey (or citrus honey) is obtained by putting beehives in the citrus groves while trees bloom. By this method, bees also pollinate seeded citrus varieties. This type of honey has an orangey taste and is highly prized. Orange leaves can be boiled to make orange tea. Oranewood sticks are used as cuticle pushers in manicures and pedicures, and as spudgers for manipulating slender electronic wires. Oranewood is used in the same way as mesquite, oak, and hickory for seasoning grilled meat.

Piper Betel: [24]

Betel leaf by itself has adverse health effects, in part because of tannins delivered by the leaf and for reasons currently not fully understood. For example, one research paper studied chromosome damaging effect of betel leaf in human leukocyte cultures.

These researchers report an increase in the frequency of chromatid aberrations when the leaf extract was added to cultures. Another scientific study from Japan indicates that the lab rats that ate a mixture of betel leaf and areca nuts all had severe thickening of the upper digestive tract whereas after undergoing a diet of betel leaves alone, only one laboratory rat ended up having a forestomach papilloma.

Rosemary: [25]

Rosemary contains a number of phytochemicals, including rosmarinic acid, camphor, caffeic acid, ursolic acid, betulinic acid, carnosic acid and carnosol. In traditional medicine, extracts and essential oil from flowers and leaves are used in the belief they may be useful to treat a variety of disorders. Rosemary essential oil contains 10-20% camphor, though the chemical composition can vary greatly between different samples, according to in vitro studies.

Liquorice:[26]

Glycyrrhizin has also demonstrated antiviral, antimicrobial, anti-inflammatory, hepatoprotective, and blood pressure-increasing effects in vitro and in vivo, as is supported by the finding that intravenous glycyrrhizin (as if it is given orally very little of the original drug makes it into circulation) slows the progression of viral and autoimmune hepatitis. In one clinical trial liquorice demonstrated promising activity, when applied topically, against atopic dermatitis. Additionally, liquorice may be effective in treating hyperlipidaemia (a high amount of fats in the blood). Liquorice has also demonstrated efficacy in treating inflammation-induced skin hyperpigmentation. Liquorice may also be useful in preventing neurodegenerative disorders and dental caries. The antiulcer, laxative, antidiabetic, anti-inflammatory, immunomodulatory, antitumour and expectorant properties of liquorice have been investigated. The compound glycyrrhizin (or glycyrrhizic acid), found in liquorice, has been proposed as being useful for liver protection in tuberculosis therapy, but evidence does not support this use, which may in fact be harmful.

Boerhavia Diffusa: [27]

Boeravinones G and H are two rotenoids isolated from *B. diffusa*. A quinolone alkaloid, lunamarine, isolated from *B. diffusa* has shown some in vitro anticancer, antiestrogenic, immunomodulatory, and anti-amoebic activity (particularly against *Entamoeba histolytica*). The plant contains a protein called BDP-30, presumably a ribosome-inactivating protein.

Glycine Max: [28]

Saponins, a class of natural surfactants (soaps), are sterols that are present naturally in a wide variety of plant foods, including vegetables, legumes, and cereals such as oats. Whole soybeans contain from 0.17 to 6.16% saponins, 0.35 to 2.3% in defatted soy flour and 0.06 to 1.9% in tofu. Legumes such as soybean and chickpeas are the major source of saponins in the human diet. Sources of non-dietary saponins include alfalfa, sunflower, herbs and barbasco. Soy contains isoflavones like genistein and daidzein, and glycitein, an O-methylated isoflavone which accounts for 5–10% of the total isoflavones in soy food products. Glycitein is a phytoestrogen with weak estrogenic activity, comparable to that of the other soy isoflavones.

Coriandrum Sativum: [29]

The nutritional profile of coriander seeds is different from the fresh stems or leaves. Leaves are particularly rich in vitamin A, vitamin C and vitamin K, with moderate content of dietary minerals (table). Although seeds generally have lower content of vitamins, they do provide significant amounts of dietary fiber, calcium, selenium, iron, magnesium and manganese. One preliminary study showed coriander essential oil to inhibit Gram-positive and Gram-negative bacteria, including *Staphylococcus aureus*, *Enterococcus faecalis*, *Pseudomonas aeruginosa*, and *Escherichia coli*.

Tamarindus Indica: [31]

Throughout Southeast Asia, the fruit of the tamarind is used as a poultice applied to foreheads of fever sufferers. The fruit exhibits laxative effects due to its high quantities of malic acid, tartaric acid, and potassium bitartrate. Its use for the relief of constipation has been documented throughout the world. In hens, tamarind has been found to lower cholesterol in their serum, and in the yolks of the eggs they laid. Due to a lack of available human clinical trials, there is insufficient evidence to recommend tamarind for the treatment of hypercholesterolemia or diabetes.

Terminalia Arjuna: [30-32]

Recent studies in rat model have shown its preventive potential in monocrotaline induced pulmonary artery hypertension. It prevents rise in right ventricular systolic pressure, right ventricular hypertrophy, % medial wall thickness, echo-cardiographic changes through inhibition of reactive oxygen species (ROS) Reactive oxygen species mediated pulmonary

vascular remodeling. It has also been identified to inhibit NADPH oxidase (NOX1)NADPH_oxidase in lung homogenate.

Daucus Carota: [32]

Like the cultivated carrot, the *D. carota* root is edible while young, but it quickly becomes too woody to consume. The flowers are sometimes battered and fried. The leaves are also edible except in large quantities. Extra caution should be used when collecting *D. carota* because it bears a close resemblance to poison hemlock. In addition, the leaves of the wild carrot may cause phytophotodermatitis, so caution should also be used when handling the plant. It has been used as a method of contraception and an abortifacient for centuries. If used as a dyestuff, the flowers give a creamy, off-white color. *D. carota*, when freshly cut, will draw or change color depending on the color of the water in which it is held. This effect is only visible on the "head" or flower of the plant. Carnations also exhibit this effect. This occurrence is a popular science demonstration in primary grade school.

Cocoa Bean: [33]

In general, cocoa is considered to be a rich source of antioxidants such as procyanidins and flavanoids, which may impart antiaging properties. Cocoa also contain a high level of flavonoids, specifically epicatechin, which may have beneficial effects on cardiovascular health. Cocoa is a stimulant and contains the compounds theobromine and caffeine. The beans contain between 0.1% and 0.7% caffeine, whereas dry coffee beans are about 1.2% caffeine. The stimulant activity of cocoa comes from the compound theobromine which is less diuretic as compared to theophylline found in tea. Prolonged intake of flavanol-rich cocoa has been linked to cardiovascular health benefits, though this refers to raw cocoa and to a lesser extent, dark chocolate, since flavonoids degrade during cooking and alkalizing processes. Short-term benefits in LDL cholesterol levels from dark chocolate consumption have been found. The addition of whole milk to milk chocolate reduces the overall cocoa content per ounce while increasing saturated fat levels. Although one study has concluded that milk impairs the absorption of polyphenolic flavonoids, e.g. epicatechin, a follow up failed to find the effect.

Chocolate: [34]

Chocolate may be a factor for heartburn in some people because one of its constituents, theobromine, may affect the oesophageal sphincter muscle, hence permitting stomach acidic contents to enter into the

oesophagus. Theobromine is also toxic to some animals unable to metabolize it (see theobromine poisoning). Excessive consumption of large quantities of any energy-rich food, such as chocolate, without a corresponding increase in activity to expend the associated calories, can increase the risk of weight gain and possibly obesity. Raw chocolate is high in cocoa butter, a fat which is removed during chocolate refining, then added back in varying proportions during the manufacturing process. Manufacturers may add other fats, sugars, and milk as well, all of which increase the caloric content of chocolate.

Spinach: [35]

Raw spinach is 91% water, 4% carbohydrates, 3% protein, and contains negligible fat. In a 100 g (3.5 oz) serving providing only 23 calories, spinach has a high nutritional value, especially when fresh, frozen, steamed, or quickly boiled. It is a rich source (20% or more of the Daily Value, DV) of vitamin A, vitamin C, vitamin K, magnesium, manganese, iron and folate (table). Spinach is a good source (10-19% of DV) of the B vitamins riboflavin and vitamin B6, vitamin E, calcium, potassium, and dietary fiber.

Turnip: [36]

The turnip's root is high in vitamin C. The green leaves of the turnip top ("turnip greens") are a good source of vitamin A, folate, vitamin C, vitamin K and calcium. Turnip greens are also high in lutein (8.5 mg / 100 g). One medium raw turnip (122 grams (0.269 lb)) contains these nutritional elements according to the USDA: Calories: 34, Fat: 0.12 g, Carbohydrates: 7.84 g, Fiber: 2.2 g, Protein: 1.10 g.

Rhubarb: [37]

In traditional Chinese medicine, rhubarb roots have been used as a laxative for several millennia. Rhubarb also appears in medieval Arabic and European prescriptions. It was one of the first Chinese medicines to be imported to the West from China. A pigment found in rhubarb called paretin, has been identified from an FDA database of 2,000 known suppressors of 6PGD, to have killed half the human leukemia cells over two days in the laboratory. The pigment also slowed the growth of other human cancer cells in mouse models. A more-potent derivative of the paretin called S3 may even cut the growth of lung cancer cells implanted in mice by two-thirds, over the course of 11 days.

Whole Grains: [38]

Whole grains are a source of multiple nutrients and dietary fiber, recommended for children and adults in

several daily servings containing a variety of foods that meet whole grain-rich criteria. By supplying high dietary fiber content, as part of a general healthy diet, consumption of whole grains is associated with lower risk of several diseases, including coronary heart disease, stroke, cancer and type 2 diabetes, with lower all-cause mortality. Regular whole-grain consumption lowers LDL and triglyceride levels, which contributes to an overall 26% reduction in coronary heart disease-risk factors. In addition, whole-grain consumption is inversely related to hypertension, diabetes, and obesity when compared to refined grains, all of which are negative indicators in total cardiovascular health.

Maize: [40]

Raw, yellow, sweet maize kernels are composed of 76% water, 19% carbohydrates, 3% protein, and 1% fat (table). In a 100-gram serving, maize kernels provide 86 calories and are a good source (10-19% of the Daily Value) of the B vitamins, thiamin, niacin, pantothenic acid (B5) and folate (right table for raw, uncooked kernels, USDA Nutrient Database). In moderate amounts, they also supply dietary fiber and the essential minerals, magnesium and phosphorus whereas other nutrients are in low amounts. Maize has suboptimal amounts of the essential amino acids tryptophan and lysine, which accounts for its lower status as a protein source.

Legumes: [43]

Legumes are a significant source of protein, dietary fiber, carbohydrates and dietary minerals; for example, a 100 gram serving of cooked chickpeas contains 18% of the Daily Value (DV) for protein, 30% DV for dietary fiber, 43% DV for folate and 52% DV for manganese. Like other plant-based foods, pulses contain no cholesterol and little fat or sodium. Legumes are also an excellent source of resistant starch which is broken down by bacteria in the large intestine to produce short-chain fatty acids (such as butyrate) used by intestinal cells for food energy.

Tea: [19]

Caffeine constitutes about 3% of tea's dry weight, translating to between 30 mg and 90 mg per 8-oz (250-ml) cup depending on type, brand, and brewing method. A study found that the caffeine content of 1 g of black tea ranged from 22 to 28 mg, while the caffeine content of 1 g of green tea ranged from 11 to 20 mg, reflecting a significant difference. The astringency in tea can be attributed to the presence of polyphenols. These are the most abundant compounds in tea leaves, making up 30-40% of their

composition. Tea also contains small amounts of theobromine and theophylline, which are stimulants, and xanthines similar to caffeine. Because of modern environmental pollution, fluoride and aluminium also sometimes occur in tea. Certain types of brick tea made from old leaves and stems have the highest levels. Black and green teas contain no essential nutrients in significant content, with the exception of the dietary mineral, manganese at 0.5 mg per cup or 26% of the Daily Value. Tea leaves contain diverse polyphenols, including flavonoids, epigallocatechin gallate (commonly noted as EGCG) and other catechins.

Beans: [44]

Beans are high in protein, complex carbohydrates, folate, and iron. Beans also have significant amounts of fiber and soluble fiber, with one cup of cooked beans providing between nine and 13 grams of fiber. Soluble fiber can help lower blood cholesterol. Consuming beans adds significant amounts of fiber and soluble fiber to a diet, with one cup of cooked beans providing between nine and thirteen grams of fiber. Soluble fiber can help lower blood cholesterol. Adults are recommended to have up to two (female), and three (male) servings. 3/4 cup of cooked beans provide one serving.

Cabbage: [45-50]

In addition to its usual purpose as an edible vegetable, cabbage has been used historically as a medicinal herb for a variety of purported health benefits. The Ancient Greeks recommended consuming the vegetable as a laxative, and used cabbage juice as an antidote for mushroom poisoning, for eye salves, and for liniments used to help bruises heal. In Cato the Elder's work *De Agri Cultura* ("On Agriculture"), he suggested that women could prevent diseases by bathing in urine obtained from those who had frequently eaten cabbage. The ancient Roman nobleman Pliny the Elder described both culinary and medicinal properties of the vegetable, recommending it for drunkenness—both preventatively to counter the effects of alcohol, and to cure hangovers. Similarly, the Ancient Egyptians ate cooked cabbage at the beginning of meals to reduce the intoxicating effects of wine. This traditional usage persisted in European literature until the mid-20th century.

SUMMARY AND CONCLUSION:

Ageing which is believed to be inherent, universal, progressive natural phenomenon which is a complex interaction of environmental, dietary and internal changes. Fighting ageing process may bring about an

improvement of an age related illness leading to improved appearance of aged skin. Herbs are the natural products rich in anti-oxidant, low in sugar, starches and plenty of right types of fats that may slow down the process of ageing that may lead to the possibility of safer and more effective products. The present review reveals that the potential herbs that can be proved with scientific investigators as anti-ageing products.

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