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A SHORT REVIEW OF GOJI BERRY, GINGER, GINSENG AND ASTRAGALUS IN TRADITIONAL CHINESE AND ASIAN MEDICINE

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Abstract

Goji berry has long played important roles in Traditional Chinese Medicine (TCM), where they are believed to enhance immune system function, improve eyesight, protect liver, boost sperm production and improve circulation, among other effects. Ginger has been used in traditional medicine as an anti-edema drug and is used for the treatment of various diseases including nausea, gastrointestinal disorders, respiratory disorders, athero-sclerosis, migraine, depression, gastric ulcer, cholesterol; and other benefits of giner are reducing pain, rheumatoid arthritis, anti-inflammatory, and antioxidant effects. Ginseng contains an abundance of diversified chemical elements hardly found in other medicinal herbs. Red Ginseng is known to possess various biological activities including boosting the immune system, improving the blood circulation, enhancing memory, antifatigue effects, antioxidant effects and positive effects on menopausal disorder; white ginseng is used to promote the production fluids of body fluids as well as enhance physical fitness. In TCM, Astragalus considers to use in the treatment of diabetes, mellitus, nephritis, leukemia, uterine cancer, besides its tonic agent and diuretic effects. The usage of non-toxic and organic plant products having TCM Crops, development of modern drugs from Goji Berry, Ginger, Ginseng and Astragalus should be emphasized for the control of various diseases.

Keywords: Goji berry, Ginger, Ginseng, Astraglaus, Traditional Chinese Medicine

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1. Introduction

1.1. Goji Berry and Traditional Chinese Medicine

Traditional Chinese medicine has been used for centuries in different part of the world (Shahrajabian et al., 2019a,b,c,d,e,f,g; Sun et al., 2019a,b). Goji which is also called wolfberry has been used as traditional medicinal foods in China and other Asian countries for centuries (Potterat, 2010). They are very hard, spiny, shrubby vines in the tomato-nightshade family Solanacaea. Goji berry has different vernacular names; the most common name,

wolfberry, comes from the character"gou"as it is related to the one that means wolf. The name goji is an extrapolation of a number of native words, and it was originally coined in 1973 by researchers at the Tanaduk Botanical Research Institute (TBRI) (Amagase and Farnsworth, 2011). Goji plants are native to China, where they grow from the subtropics in the south to the cold, dry climate on Inner Mongolia. Commercial fruit production is concentrated near Inner Mongolia. The fruit are red like a tomato, with a green calyx near the stem. Seeds are small and edible, similar to tomato seeds. Flowers open a purple colour which fades to yellow (Amagase & Farnsworth, 2011; Amagase, 2014). Noted that geographical origin is one of the most important quality parameters for many foods, since the differences in climate, soil and cultivation methods cause differences in the chemical composition of the plants (Bondia-Pons et al., 2014). Cao and Wu (2015) reported that while Ningxia is recognized as the daodi region of Goji, increasing market demands pushed the cultivation into new regions in China and Goji fields now stretch over different geographical and climatic environments between 82oE and 115oE, 30oN and 45oN. These include temperate monsoon climate (Hebei), temperate continental semi-arid climate (Ningxia, Gansu and Inner Mongolia), plateau continental climate (Qinghai), and continental arid climate (Xinjiang) (Li et al., 2017). These different environmental conditions influence both the appearance and the metabolite profile of Goji (e.g., amount of polysaccharides, flavonoids, betaine, and carotenoids) (Zhang et al., 2012; Shen et al., 2016). Moreover, different species and cultivars (e.g., Ningqi series) are widely cultivated while *L. chinese* is only cultivated in Hebei (Cao and Wu, 2015). Traditionally, a good Goji quality was defined as: Large berries with red colour, mild texture, few seeds, and sweet taste. Goji berry belongs to division of Magnoliophyta, class of Magnoliopsida, order of Solanales, family of Solanaceae and Genus of Lycium. Goji berry or wolf berry is the common name of the fruits *Lycium barbarum* or *Lycium chinese*, which are two closely related species (Chang et al., 2010; Redgwell et al., 2011). The genus *Lycium* (*Solanaceae*) consists of about 80 species found worldwide in arid to semi-arid environmental condition (Chen et al., 2013; Huang et al., 2015). The main centers of diversity for this genus are distributed between Argentina and Chile, Southern Africa and Southwestern North America (Miller and Venable, 2003; Miller et al., 2008). *L. barbarum* and *L. chinese* have been domesticated and widely cultivated in Northwest China for more than 600 years. *L. ruthenicu*, is endemic to northwestern China and is regarded as a potential plant to control erosion because of its high salt-tolerance (Chen et al., 2013). Some common species of wolfberry in Arizona, California and Mexico are Wolfberry or Frutilla (*Lycium brevipes*), Wolfberry or Manzanita (*Lycium andersonii*), Wolfberry or Barchata (*Lycium berlandieri*), Wolfberry or Frutilla (*Lycium californicum*), Wolfberry or Frutilla (*Lycium exsertum*), and wolfberry or Frutilla (*Lycium fremontii*). In recent years, there has been a growing trend in introducing Goji cultivation to different pedoclimates in Europe (Italy, Romania, Bulgaria, Portugal), or even developing new cultivars (Donno et al., 2015; Mocan et al., 2017; Protti et al., 2017). Currently, Romania has the biggest cultivated area of *L. barbarum* plants in the European Union (Mocan et al., 2018). Goji plant can handle a wide range of conditions (Patsilinakos et al., 2018). They prefer a moderately moist, well-drained soil, but they are also fairly drought tolerant. The berries will produce and ripen the best in full sun. Goji berry shrubs have long, arching branches that hold up better with some structural support. The famers can also train Gojis onto a trellis, fence or any other solid structure. Due to their vigorous growth habit, Gojis can be pruned anytime to control their height and shape. Yao et al. (2018) reported that it does not justify superiority of a specific production area over other areas. Instead it will be essential to distinguish Goji from different regions based on the specific morphological and chemical traits with the aim to understand what its intended uses are. Liu et al. (2017) postulated that environmental temperature play one of the most and important factor influencing on the phenolic compositions and contents in the leaves and stems. From an agronomical point of view, each region produces specific cultivars that may differ in chemical composition and biological properties (Wojdylo et al., 2018). For example, the differences between Goji berries growing in China and Italy was previously evaluated by Rocchetti et al. (2018) or in different localization in China (Dong et al., 2012). Some of the first healers to recognize the power of the Goji Berry were the Himalayan people, who utilized the berries of the Goji vine which flourished in the valleys of the Himalayas for thousands of years. Some sources state that wolf berries have been used in traditional Chinese medicine for at least 2000 years (Williamson et al., 2013). Their undocumented legend, however, is considerably older, as wolf berries are often linked in Chinese lore to Shen Nung (Shennong), China ,s legendary First Emperor, mythical father of agriculture, and herbalist who lived circa 2800 BC. The book was named Shennong Ben Cao Jing and was supposed to contain all of the emperor's knowledge on the subject of agriculture. There is another important Chinese book written by Li Shi-Zhen in the 16th century that also included important information on the subject of the Goji berry. From a TCM point of view, the nature of Goji berry is calm, and its flavour is sweet. According to TCM theory and practice, Goji berry can act on both the liver channel and the kidney channel, and the major health benefits of Goji berry are its ability to nourish and tonify liver and kidney (Cieslik and Gebusia, 2012). It should be noted that Goji berry is used not only as a drug in TCM prescriptions to treat diseases but also as a popular food by Chinese people in their daily life for promotion of general health. According to the regulations of the China

State Food and Drug Administration, Goji berry is one of the 87 TCM ingredients that can be used as both normal food and functional food (Bucheli et al., 2011; Fiorito et al., 2019). Goji berry translates to wolfberry. One theory as to the origin of the wolfberry name stems from speculation that Chinese farmers saw wolves sheltering among the dense Goji berry vines. Most of the world's Goji berry production centers around areas in Northwestern China, where there are 200,000 acres of farmland dedicated to Goji berry cultivation. Goji berry plantations can also be found in Inner Mongolia and Shaanxi (Zhu et al., 2016). Wu et al. (2018) also reported that northwest regions of China are the main producing area of L. barbarum, including Xinjiang, Tibet, Ningxia, Inner Mongolia, Qinghai and Gansu. Goji berries provide 8 essential amino acids that the body cannot synthesize. One of the most important reason for the popularity of Goji berries is the fact that they contain a high concentration of an antioxidant called Zeaxanthin. According to various studies, a diet that contains Goji berries can increase a person's Zeaxanthin levels by as much as 26 percent. Goji berry is frequently added to soups, hot pots, and herbal teas, and is also popularly soaked in wines alone or together with other TCM ingredients to make functional wines (Bucheli et al., 2011; Zhang et al., 2015). Red Goji (Lycium barbarum L.) is a perennial, deciduous shrub growing northwest China and the Mediterranean region (Zhao et al., 2015). Black Goji is a black colour small berry fruit from (Lycium ruthenicum Murr.) natively growing in northwest part of China (Xin et al., 2017). Tang and Giusti (2018) reported that the fruit, known as black Goji, is popular in traditional Chinese medicine. On the basis of TCM view, Goji berry is mainly used in treating yin deficiency in liver and kidney. The dried fruit is commonly used in TCM preparations at a dose of 6-15 g, taken twice or thrice daily (Liu and Tseng, 2005). Goji berry can also be a part of a mix of Chinese herbs that is ground to a fine powder and used in honey pills (a traditional TCM formulation in which honey is used as main excipient to make pills) of 15 g each. One of these pills is taken with bland soup in the morning and another at night on an empty stomach (Liu and Tseng, 2005; Wang et al., 2018). Goji berry is one of the most popular TCM herbs regulated as a foodstuff that is used in nutricosmetic products in China. Nutricosmetics are used for the promotion of skin and hair health. Only angelica and pearl powder are more frequently found in nutricosmetic products in China (Bucheli et al., 2011). Wojcieszek et al. (2017) reported that compounds identified in Goji berries are most likely to be responsible for better bioaccessibility of elements like copper and zink to the human organism. The berries are also used in traditional Korean medicine, traditional Japanese medicine, and traditional Tibetan medicine (Wang et al., 2010; Yao et al., 2011; Cho et al., 2016). Goji Berry root bark is used for treating inflammation and certain skin diseases. Song et al. (2011) concluded that the traditional Chinese medicine, L. barbarum and its taurine component is valuable medicinal herb for the prevention of diabetic retinopathy.

1.2. Ginger and Traditional Chinese Medicine

Zingiber officinale is a member of the *Zingiberaceae* plant family, native to East and southern Asia, consisting of 49 genera and 1300 species, 80-90 of which are *Zingiber*. Its generic name *Zingiber* is derived from the Greek *zingiberis*, which comes from the Sanskrit name of the spice, singabera; the Latin name, *Zingiber*, means shaped like a horn and refers to the roots, which resemble a deer ,*s* antlers (Sharma et al., 2017). The plant is known as Sringavera in Sanskrit. Ginger (*Zingiber officinale Roscoe*.) has a long history of being used as a medicine and herbal since ancient time and had been used as an important cooking spice throughout the world (Nour et al., 2017). It is a plant that is used in folk medicine from south-east Asia, and in Greco-Roman traditions, Brazil, Australia, Africa, China, India, Bangladesh, Taiwan, Mexiceo, Japan, Jamaica, the India, the middle east and parts of the United states also cultivate the rhizomes for medicinal purpose (Yadav et al., 2016). El-Sayed and Moustafa (2016) reported that ginger rhizome is widely used as a spice or condiment. For centuries has been an important ingredient in Traditional Chinese Medicine, Ayurvedic, and Unani-tibb herbal medicines for the treatment of different diseases (Ali et al., 2008). *Zingiber officinale* was also one of the first oriental spices to be grown to the Europeans, it was introduced to northern Europe by the Romans who got it from Arab traders and was one of the most popular spices in the Middle Ages (Kala et al., 2016). Alakali et al. (2009) also mentioned that ginger was one of the earliest oriental species known in Europe in the 9th century, in the 13th century, it was introduced to East Africa by the Arabs. In West African and other parts of the tropics, it was introduced by the Portuguese in the 16th century. The spice was known in Germany and France in the ninth century and in England in 10th century for its medicinal properties (Yadav et al., 2016). Elzebroek and Wind (2008) found that Marco Polo, introduced to ginger while visiting China and Sumatra in the 13th century, transported some to Europe. They have also discussed how the cultivation of ginger in Mexico was initiated by the Spaniard, Francesco de Mendoza. In China, dried Ginger, known as Gan-jiang is mentioned in the earliest of herbals, She Nung Ben Cao Jing, attributed to Emperor Shen Nung (almost 2000 BC). Chinese records dating from 4th century BC indicate that Ginger was used to treat numerous conditions including stomachache, diarrhea, nausea, cholera, henorrhage, rheumatism, and toothaches. Not only in Traditional Chinese Medicine, but also in modern China, Ginger is used in about half of all herbal prescriptions, because of its ability to act as messenger, servant and guide herb that brings other herbal medicines to the site where they are needed (Afzal et al., 2001). Ginger cultivation back about 3000 years ago in India, and it remains an integral part of Indian cuisine

where it is commonly used in many popular dishes (Daily et al., 2015). Lister (2003) revealed that the ginger plant has a long history of cultivation known to originate in China and it was one of the most part of Chinese Traditional Medicine, and then spread to India, Southeast Asia, West Africa and the Caribbean. In Korea, ginger has been used to season foods for the last 1000 years approximately (Daily et al., 2015). Black ginger, the rhizome of *Kaempferia parviflora* (*Zingiberaceae*), has traditionally been used as food and a folk medicine for one thousand year in Asian Traditional Medicine especially in Thailand. The dried rhizome is pulverized and used as tea bags, while fresh one is utilized to brew wine. As dietary supplements, it has been made into various preparations such as medicinal liquor or liquor plus honey, pills, capsules and tablets. It has been claimed that black ginger is appropriate to cure allergy, asthma, impotence, gout, diarrhoea, dysentery, peptic ulcer and diabetes (Toda et al., 2016). Other notable member of this family (*Zingiberacea*) is turmeric otherwise called red ginger (Curcuma longa) (Akinyemi et al., 2015). It is a rhizomatous herbaceous perennial plant, in the ginger family, employed as a dye source food colorant due to its characteristics yellow colour (Chan et al., 2009). Ginger has direct anti-microbial activity and thus can be used in treatment of bacterial infections (Tan and Vanitha, 2004). In Traditional Chinese Medicine, it is employed in colic and in atonic dyspepsia and used as a stimulant (Sharma, 2017; Yilmaz et al., 2018). Ginger is regarded as a Yang herb, which can decrease Yin and nourish the body (Jittiwat and Wattanathorn, 2012). Mishra et al. (2012) also revealed that ginger in Traditional Chinese Medicine, characterized as spicy and hot, and it is claimed to warm the body and treat cold extremities, improves a weak and tardy pulse, address a pale complexion, and strengthen the body after blood loss. In Traditional Chinese Medicine as herbal therapy against several cardiovascular diseases (Wynn et al., 2001). Based, on the historical usage of ginger as an antiemetic agent in the East Traditional Medicine. The antiemetic effect of ginger has been known as a treatment method in traditional medicine especially the Chinese and Iranian Medicine (Naderi et al., 2016; Soltani et al., 2018). Sharma (2017) explained that many of herbs and plant extracts such as ginger is based on what has been used as part of Traditional Medicine Systems and there is a large body of anecdotal evidence supporting their use and efficacy. Some other researchers emphasized that ginger plays an important role in Ayurvedic, Chinese, Arabic and African traditional medicines used to treat headaches, nausea, colds, arthritis, rheumatism, muscular discomfort and inflammation (Baliga et al., 2011; Dehghani et al., 2011). Recently, ginger rhizomes are used in Traditional Medicine as therapy against several cardiovascular diseases such as hypertension (Ghayur et al., 2005). Niksokhan et al. (2014) reported that ginger has been used in Traditional Medicine of Iran as an anti-edema drug and is used for the treatment of various diseases including nausea, gastrointestinal disorders, respiratory disorders, athero-sclerosis, migraine, depression, gastric ulcer, cholesterol; and other benefits of giner are reducing pain, rheumatoid arthritis, anti-inflammatory, and antioxidant effects.

1.3. Ginseng and Traditional Chinese Medicine

The ancient Chinese have identified 11,146 medicinal species from 383 families, and more than 400 of which are widely used throughout the world (Drasar and Moravcova, 2004; Shahrajabian et al., 2018). Panax ginseng (Giseng) is well-known herb in traditional Chinese medicine (TCM) (Hsu et al., 2013). Panax means cure for all disease, as it combines the Greek words pan meaning all and zxos meaning medicine (Jeong et al., 2012). In traditional Chinese medicine (TCM), it is believed that food and medicine come from the same origin but with different uses and applications (Chan et al., 2010). Therefore, it is common for Chinese people to incorporate different TCM herbs into their diet to produce various healthy food recipes so as to achieve better taste, more attractive appearance and improved texture of the food and most importantly to improve health (Guo et al., 2008). Traditional Chinese Medicine (TCM) originates in ancient China with a 5000-year history. Rooted in ancient Eastern philosophies such as Taoism, TCM focuses on a holistic view between humans and nature. Through the observations of universal principles within nature, TCM inquiries from a macro level into the microcosm of human physiology and the mutual relationships between our body's internal workings and the external environment (Cheung et al., 2017). Traditional Chinese medicine is still common use in China. More than half of the population regularly uses traditional remedies, with the highest prevalence of use in rural areas. About 5000 traditional remedies are available in China; they account for approximately one fifth of the entire Chinese pharmaceutical market. Panax ginseng is often described as the lord or king of herbs (Wen and Zimmer, 1996), which holds an important position in TCM and traditional Oriental medicine in many countries (Xie et al., 2005). *P. quinquefolius* is used in Traditional Chinese Medicine to treat deficiency conditions associated with symptoms such as fatigue, irritability, thirst and dryness of the mouth of respiratory tract (Chen and Chen, 2004). The most important common names of ginseng in different parts of world are American ginseng, give finger root, sang, tartar root, red berry, man ,s health, root of life, dwarf groundnut, garantogen, jinshard, ninsin, little man, garent-oquen. The name ginseng originates from the Chinese words, Jen Sheng and means man herb because of the human-like shape of the root or rhizome of the plant. The word Panax means cure all and describes the traditional belief that ginseng has properties that heal all bodily disease (Kim et al., 2018). To date, 14 plants, including 12 species and two infraspecific taxa, have been classified under the genus Panax (Shin et al., 2015). The

three major commercial ginseng sorts are the Korean ginseng (*Panax ginseng Meyer*), the Chinese ginseng (*Panax notoginseng* (Burk.). F. H.), and the American ginseng (*Panax quinquefolius L.*), and they have been used worldwide as herbal medicines for thousands of years (Kim, 2012). Ginseng is also part of Sasang Constitution Medicine (SCM) and Korean Oriental Medicine (KOM) (Choi et al. 2006). Recent studies have shown that processing ginseng alters its chemical profile and may change its properties and pharmacological activities (Xie et al., 2012; Wan et al., 2015). The origin of ginseng dates back to prehistory. In China, Shennong (Divine Peasant) also known as Emperor Yan, the Yellow Emperor, one of the three Emperors, the Emperor who is said to have started herbal medicine about 5500 years ago, is reported to have tasted hundreds of plants to discover many medicinal herbs (Zheng, 1985). Three hundred and sixty-five kinds of herbs are listed and they are divided into three classes according to the degree of toxicity (Yun, 2001). The superior ones are non-toxic and serve to reinforce vital energy, and can be taken regularly. Some species have different TCM natures. P. ginseng is hot while, *P. quinquefolius* is cool (Schlag and McIntosh, 2013). Modern molecular and biochemical studies have confirmed the TCM belief that American and Asian ginsengs have conflicting effects (Sievenpiper et al., 2004). In TCM practice, White ginseng and red ginseng are used for different purposes; white ginseng is used to supply qi and promote the production fluids of body fluids as well as enhance physical fitness and disease resistance, while red ginseng has a warming effect and is used for boosting yang and replenishing vital essence (Zhang et al., 2012; Zhang et al., 2019).

1.4. Astragalus and Traditional Chinese Medicine

Chinese herbs have been used as traditional medicine immune booster for human being for thousands of years in China (Shahrajabian et al., 2018). More than 3 million tons of herb medicines were produced in China, and their medicinal parts were consumed in TCM clinic (Soleymani and Shahrajabian, 2012; Ogbaji et al., 2018; Soleymani and Shahrajabian, 2018). In traditional Chinese medicine, some herbals have been used for anti-aging since ancient times. *Astragalus membranaceus* as one of the most important Qi tonifying adaptogenic herbs in traditional Chinese medicine, has a long history of medicinal use (Yang et al., 2010; Zhong et al., 2012). In traditional Chinese medicine, which laid a lot of emphasis on Qi (vital energy) and Yin-Yang balance (negative and positive equilibrium), Astragalus is considered as benefiting Qi and helping to pass water. It has been used as therapy for Wei Zheng, a term for skeletal muscle fatigue and wasting (Zhou and Mei, 2014). The dried root of *A. membranaceus*, first documented in Shennong Bencao Jing (Shennong ,s Classic of Materia Medica, 200-300 AD), is one of the most popular health promoting herbal medicines commonly used in China for more than 2000 years. In modern Chinese medicine, it is used in Fu zheng therapy as an immune stimulant (Ionkova et al., 1997). Also known as Huang Qi (Chinese), Milk-Vetch (English), Hwanggi (Korean), and Ogi (Japanese) (Chou et al., 2007). It is sold in dietary supplements in tea or capsule form in the USA, and in the tea, beverages, soup, and trail mix (gorp) in Asia (Zhang et al., 2011). Chinese milk vetch (*Astragalus sinicus* L.) is also a traditional leguminous green manure which plays an important role in maintaining paddy soil fertility and in the popularizing of the double-rice farming system in southern China; it is ploughed into soil at full blooming stage and serves as an alternative to chemical nitrogen fertilizer in the region (Zhu et al., 2012). *Astragalus membranaceus* was originally described in the Shennong's Classic of Meteria medica, the earliest complete Pharmacopoeia of China written from Warring States Period to Han Dynasty (Hei et al., 2005; Auyeung et al., 2016). It is valued for its ability to strengthen the primary energy of the body which we know as the immune system, as well as the metabolic, respiratory and eliminative functions. This fact is being increasingly substantiated by pharmacological studies showing that it can increase telomerase activity, and has antioxidant, anti-inflammatory, immuneregulatory, anticancer, antitumor, antioxidant, hypolipidemic, antihyperglycemic, hepatoprotective, expectorant, immunomodulatory activity, and diuretic effects (Anon, 2003; Ma et al., 2011; Zhao et al., 2011). *Astragalus membranaceus* (*Fisch*.) Bunge. has been widely used an anti-osteoporosis herb is traditional Chinese medicine for many years (Du et al., 2004; Xi et al., 2008; Jiao et al., 2014). In Traditional Chinese Medicine, *Astragalus membranaceus* is a major component in a prescription to treat chronic phlegmatic disorders and general gastrointestinal disturbances including stomach ulcer, chronic diarrhea and intestinal inflammation (Kim et al., 2008; Yang et al., 2014). Other researchers have reported the values of Astraglaus's roots in traditional Chinese medicine with the function of strengthening exterior and promoting health for thousands of years (Ma et al., 2017; Zhao et al., 2011). Traditional Chinese herbs are generally applied in the form of multi-herb formulas in medical treatments and as dietary supplements (Li et al., 2011). They have also introduced Astragalus polysaccharide (APS) as an important bioactive and a therapeutic agent in the management of muscle wasting. Iran alone, being the richest centre of Astragalus habitation, shelters more than 850 species, 527 of which are endemic in the flora of Iran (Ranjbar and Karamian, 2002; Aslanipour et al., 2017). Aslanipour et al. (2017) stated that the crude drugs prepared from Astragalus roots are used for treating some illnesses such as leukemia, respiratory infections and diabetes in Iranian folk medicine. In traditional Chinese medicine, it is used for influenza and the common cold (McKenna et al., 2002). Nishiyama et al. (1995) reported that in traditional oriental medicine, it is conventional to combine different herbs in order to achieve a variety of treatment purposes simultaneously,

or to enhance a single effect without causing severe side effects. Erect milk vetch (*Astragalus adsurgens* Pall.), also as a palatable forage, are also widely used in returning farmland to grassland, it has an important role in restoring the degraded ecosystems and could be an effective and applicable to improve soil nutrients and prevent further soil degradation and erosion, because it grows rapidly, and was characterized by barren-tolerance, wide adaptability and strong resistance (Wang and Wang, 2013). Zhang et al. (2007) stated that Astragalus is an important traditional Chinese medicine (TCM), and now widely used an immune modulator, especially to support immune health for various chronic degenerative diseases. On the basis of traditional Chinese medicine view of cancer, causes are endogenous causes and exogenous causes. Endogenous causes are the seven emotional states (anger, grief, fear, worry, over joy, shock and melancholy) can be seen as the way that stress, worry, over work, and emotional grief can suppress the immune system and allow predispositions for cancer growth to take hold. So, while it can seem simplistic to attribute cancer to normal emotions such as sadness, worry, fear, etc., the TCM view is that when these emotions are excessive, prolonged or unresolved, they can cause disease. The concept of Jing in TCM can be likened to the role of genetics in cancer, which is an important factor indeed. Exogenous causes consists of six exogenous causes for all illness, including cancer, are climatic factors of wind, cold, dampness, dryness, summer heat and fire (Shahrajabian et al., 2019h,i,j,k,l). And, other miscellaneous causes are environmental causes, dietary causes, and drugs. The TCM concepts of yin/yang balance, the need for calmness of mind, absence of strife, the practice of health promotion through movement, all support modern ideas on the role of psychological, neurological and immunological health in cancer prevention.

Figure 1. The photo of Gojiberry, Ginger, Ginseng and Astragalus.

2. Conclusions

Traditional Chinese Medicine plays a key role in China and most Asian countries. In majority of Asian countries, especially in China, western and traditional Chinese medicine have been practised side by side of each other. Geographical origin of Goji berries are one of the most important quality parameters in TCM since the differences in climate, soil, and cultivation methods cause differences in the chemical composition of the plants. Goji berry (*Lycium barbarum*), as a Chinese traditional herb and food supplement, contains many nutrients and phytochemicals, such as polysaccharides, scopoletin, the glucosylated precursor, amino acids, flaconoids, carotenoids, vitamins and minerals. It has positive effects on anitcancer, antioxidant activities, retinal function preservation, anti-diabetes, immune function and anti-fatigue. Widely used in traditional Chinese medicine, Goji berries can be sold as a dietary supplement or classified as nutraceutical food due to their long and safe traditional use. TCM calls for Goji berries to prepared as a decoction or ground into a powder and mixed with other herbs. In TCM science, it has been reported that this crop is also good to improve eyesight and to strengthen the liver and kidney. Fresh ginger has been used for treatment of nausea, cold-induced disease, colic, asthma, cough, heart palpitation, swellings, dyspepsia, loss of appetency and rheumatism. Ginger is an herbal, easily available, low price medication which is associated with low risk can be substituted for a chemical, scarce and expensive drugs. Ginseng is the most famous of the Chinese herbs throughout the world, and has been one of the most valued herb in China. In TCM practice, White ginseng and red ginseng are used for different purposes; white ginseng is used to supply qi and promote the production fluids of body fluids as well as enhance physical fitness and disease resistance, while red ginseng has a warming effect and is used for boosting yang and replenishing vital essence. White ginseng is better for boosting fluids and is considered to be warmer and stronger for supplementing Qi. It has been shown that the chemical compositions of white and red ginseng are different so they have different biological effects. Ginseng is known to possess various biological activities including boosting the immune system, improving the blood circulation, enhancing memory, antifatigue effects, antioxidant effects and positive effects on menopausal disorder. Astragalus is a common Traditional Chinese Medicinal plant which is a widely used herbal product in China, other Asian countries and some western countries. Astragalus membranaceus classically prescribed in TCM in combination with other Chinese medicinal herbs as a dried root, powdered or as a decoction, with the combination depending on the desired therapeutic effect and the specific TCM diagnosis. Astragalus is an important traditional Chinese medicine (TCM), and now widely used an immune modulator, especially to support immune health for various chronic degenerative diseases. In TCM,

Astragalus considers to use in the treatment of diabetes, mellitus, nephritis, leukemia, uterine cancer, besides its tonic agent and diuretic effects. Although, TCM in China is partly integrating with western medicine science, researchers shall learn more from TCM and carry out more studies and researchers in order to explore.

Conflict of interest

The authors declare that there is no conflict of interest.

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