

Specifying the Antioxidant Activities of Five Fruits Mentioned in Quran and Sayings (Ahadith)

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Background: The fruits are the oldest types of food which accompany with the biological activities. In different chapters, Holy Quran accentuates the importance of plants which cure different diseases.

Objectives: This study was performed to synthesis the scientific and religious point of view regarding the native plants and informs about the types of fruits mentioned in Quran.

Materials and Methods: The fruits are classified based on the scientific, English, local names and species name. To specify the antioxidant properties, the tests such as diphenyl picrylhydrazyl, the trolox antioxidant activities and the antioxidant activity of iron restoration were used. Total Phenol was measured using the Folin-Ciocalteu method.

Results: Phenolic compound contents ranges from 36 to 149 mg Gallic acid/100 g extract as measured by Folin-Ciocalteu method. The maximum and minimum amount of antioxidant activity was 0.3-3.83 mg/mL extract. The limited amount of the antioxidant activity using iron restoration method ranged from 0.73 to 10.58 Mmol of Fe (II)/100 mg extract. The maximum and minimum amount of antioxidant activity was 12.4 Mmol and 0.91Mmol trolox/g extract, respectively. The amount of antioxidant activity was observed in pomegranate, olive, date palm and figs.

Conclusions: Medicinal herbs are used extensively due to the public acceptance, the least amount of damage and the minimal side effects on consumers.

Keywords: Antioxidants; Phenol; 2,2-diphenyl-1-picrylhydrazyl

1. Background

Many scientific contents about health and nutrition have been accentuated in Quran and other holy books and sayings (Ahadith). One of the aims of considering fruits in Quran are making the believers aware of God's power as suggested in verse 160 of Al-Araf, so that according to God's saying "eat of the good things we have provided for you", He attributed the provisions of human to his power (1). In Quran, some fruits were suggested to make human ponder and think. For instance, in verse 4 of Al-Raad, God, points to the grapes and palm gardens. The word 'Enab' and its plural 'Aanab' meaning grapes were accentuated repeatedly for 11 times, olive for 7 times, pomegranate for 3 times and palm more than other fruits. Fruits are considered as the oldest food of human and they are suggested many times in the old sources. According to Quran, the Muslim's holy book, the fruits like palm, figs, olive, grapes and pomegranate are the heavenly gifts from God. In old days, people found the fruits as heavenly gifts with amazing properties. They respect the fruits and bestowed to their Gods and draw the fruits in temples and the holy dishes (2). The

fresh and dried fruits are the main food of human and consist of the essential foodstuffs with the optimum and favorable ratios and have the rich sources such as minerals, vitamins and Enzymes and is digested easily and also the fruits are regarded as the blood and digestive system clearance. Eating fruits which have the natural nutrients causes health. By eating fruits, the diseases resulting from eating the non-natural foods can be cured (2). The fresh and dried foods are not only considered as good foods but also they have favorable properties. Eating raw fruits or their juice keeps the humidity of body. The fruits play important role in diet because they have low level of Sodium. The dried fruits like apricot, raisin and palm consist of Calcium and iron and play important role in strengthening bones and balancing blood (2). Refined apple is the best source of calcium. In case of suffering from disease, eating fruit juice is effective. Eating one or two fruits in a day makes the digestive system clean and the intestine functions easily (3). The herbs are the main components around the world. In old days, human used the herbs as medicine. After many

Implication for health policy/practice/research/medical education:

Regarding that there are specific codes for curing disease in Quran, this study focuses on these codes.

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observances and experiences, the medicinal herbs were known as pharmaceutical sources. So, treating with these herbs backs to primary civilization of human (4).

- Fig with scientific name (*Ficus carica* L), English name (Fig), Quranic name (Altin) belongs to (Moraceae). The usable parts are root, leaf and extract.

- Olive with scientific name (*Olea europaea* L), English name (Olive), Quranic name (Alzeytoon) belongs to (Oleaceae) and its fruit and oil are used.

- Pomegranate with scientific name (*Punica granatum* L), English name (Pomegranate), Quranic name (Alroman) belongs to (Lythraceae) and its fruit is used.

- Grape with scientific name (*Vinifera vitis* L), English name (Grape), Quranic name (Al-enab belongs to (Vitaceae) and its fruit and extract is used.

- Pomegranate with scientific name (*Punica granatum* L), English name (Pomegranate), Quranic name (Alroman) belongs to (Lythraceae) and its fruit is used.

- Date palm with scientific name (*Phoenix dactylifera* L), English name (Date palm), Quranic name (Tamr) belongs to (Arecaceae) and its fruit is used (1). With regard to the importance of different medicinal herbs in Yasuj and by depending upon the drug culture in Islam inspiring and documenting the holy verses of Quran and sayings (Ahadith), this research was performed to synthesize the scientific and religious use of local herbs and informs about different types of fruits mentioned in Quran and Ahadith.

2. Objectives

This research was performed to synthesize the scientific and religious use of local herbs and informs about different types of fruits mentioned in Quran and Ahadith.

3. Materials and Methods

This study was done on 5 types of fruits (fig, olive, pomegranate, grapes and date palm) which are the native plants in Iran. The fruits like fig, olive and pomegranate were purchased from NoorAbad, grape from Sisakht and date palm from Borazjan in 2011. Hydroalcoholic extracts (ethanol 70%) were prepared by drenching in about 48 hours at room temperature for two turns and then they were examined directly. In this study, a limited amount of total phenol was measured by Folin-Ciocalteu method with a little change (5). To determine the amount of antioxidant activity of free radicals of diphenyl picrylhydrazyl (DPPH) in samples, the von Gadow et al. Method was used (6), the potential of trolox anti-oxidant was determined by Re et al. method (7). The evaluation of restoration potential of samples was performed by Benzie and Strain method (8).

3.1. Determining the Amount of Total Phenol

3.1.1. Folin-Ciocalteu Method

A limited amount of total phenol was measured by Folin-Ciocalteu method with a little change (95). In this

method, 0.1 mL Hydroalcoholic extracts (with concentration of 1 mg/mL) or ethanol solution of Gallic acid (25-300 µg), 0.5 mL Folin-Ciocalteu reagent (diluted with distilled water 1:10 ratio) and 0.4 mL of sodium carbonate 7.5% were added and mixed. After 30 minutes of maintaining in laboratory temperature, its light absorption was read by spectrophotometer (Farmacia EKB model Neova spect II made in England) in wavelength of 756 nm. The amount of total phenol was determined in extract samples by the standard curve based on the mg Gallic acid/g extract.

3.2. Determining the Amount of Antioxidant Activity

3.2.1. Diphenyl Picrylhydrazyl (DPPH) Method

In 100 DPPH of antioxidant activity, all of the samples were evaluated by von Gadow et al. method (6). According to this method, 2.4 mg DPPH powder in 100 mL pure ethanol was dissolved. To test tube, 0.035 mL sample or trolox standard solution, 1 mL DPPH alcoholic solution were added and mixed. Also, DPPH solution was used as control. After placing the solution in darkness and environment temperature for 10 minutes, the light absorption of samples were read. To draw the standard curve, the trolox solution with concentration of 100-1000 µmol was used. Based on the above mentioned formula, the percentage of radical Scavenging activity in extracts (RSA) was obtained in each sample, then; the antioxidant activity of extract samples was calculated by standard curve based on the trolox µmol/g extract.

3.2.2. Evaluating the Antioxidant Activity by Radical Azino-bis(3-ethylbenzothiazoline-6-Sulphonic Acid) (ABTSE+) or Trolox Antioxidant Potential

The antioxidant activity of herbal extract was evaluated using the Re et al. method (7). To produce ABTS⁺, 7 mmol BTS and 2.45 mmol potassium persulfate were dissolved in distilled water and was maintained in darkness and environment temperature for 12-16 hours. ABTS⁺ was diluted with pure ethanol which its absorption was 0.7 ± 0.02 in wavelength of 734 nm. To 0.02 mL ethanol extract (concentration of 1 mg/mL) or trolox standard ethanol solution, 2 mL ABTS⁺ was added and mixed. Also, ABTS⁺ was used as control. After keeping the samples for 6 minutes in environment temperature, first, the Spectrophotometer (Farmacia EKB model Neova spect II made in England) has been zeroed in wavelength of 734 nm by pure ethanol and then the absorption of samples was read. To draw the standard curve, the trolox solution with concentration of 100-1000 µmol was used. The percentage of Radical Scavenging Activity was calculated based on the below formula:

A Control = the amount of control absorption in time of zero (t = 0)

A sample = the amount of sample absorption in time of 6 min (t = 6 min)

RSA, % = (AControl - ASample) × 100 / AControl

The antioxidant activity of sample extract was measured by using the standard curve based on the trolox $\mu\text{mol/g}$ extract.

3.2.3. Measuring the Antioxidant Properties by Ferric Ion Restoration Antioxidant Power

To measure the power of restoration in extract samples by FRAP with a little change, the Benzie and strain method was used (8). The solution of FRAP was prepared by mixing 10 mL of 300 mM Acetate buffer (pH = 3.6), 1 mL of 10 mM 2,4,6-Tripyridyl-s-Triazine (TPTZ) (dissolved in 40 mM chlorhydric acid) and 1 mL of 20 mM iron chloride. To 0.02 mL extract in test tube (concentration of 1 mg/mL) or the Aqueous standard solution of ferrous sulfate (concentration of 0.185-0.37 μmol), 1 mL of FRAP was added and mixed. After maintaining the above mentioned mixed solution in environment temperature of light absorption for 5 minutes, the samples were read. The restoration activity of extract samples was measured using the standard curve based on Fe $\mu\text{mol/g}$ extract.

4. Results

The pattern of amount of total phenol in studied fruits from the most to the least included olive, grapes, pomegranate, fig and date palm. The maximum and minimum amount of total phenol was 149 and 36 mg Gallic acid/10 g sample, respectively (Figure 1). The antioxidant activity of samples was measured by diphenyl picryl hydrazyl in olive, pomegranate, grapes, date palm and fig. The resulted amount was IC_{50} . This amount is considered as the concentration of extract which can inhibit 50% radical diphenyl picryl hydrazyl (Figure 2). Based the trolox antioxidant activity, pomegranate had the most and fig had the least antioxidant activity. The pattern of antioxidant in other samples was observed in olive, pomegranate and fig (Figure 3). The amount of antioxidant was observed in pomegranate, olive, grapes, date palm and fig using antioxidant potential of iron restoration (Figure 4). Overall, the antioxidant activity was observed in pomegranate, olive, grapes, date palm and fig; however, the amount of total phenol is the highest in olive and the lowest in date palm.

5. Discussion

About 70% of homeopathy drugs are provided from the fresh plants. Iran is one of the countries in which most of pharmaceutical herbs are grown. In Islam, the diseases are cured by two methods, one is the mental and spiritual therapy which is done by praying and the other is using the pharmaceutical herbs (9). Holy book, the Quran, is one of the resources which describe the usable herbs in therapy (10). Prophet Mohammad (peace be upon him) introduced different pharmaceutical herbs for treating the common diseases and recommended about the nature and significance of foods and spices and these recommendations were written out by his wife and encourage (11). Based on the scientific findings, potassium,

magnesium and sodium are found in fruits. Using the fruits and juice provides the essential mineral for body, dilutes blood and excretes the nitrogen and chloride from body. Fiber (Cellulose) in fruits causes food pass through the digestive system. Also, sugar and organic acid has laxative effect, so using the fruits continuously causes constipation treatment (3).

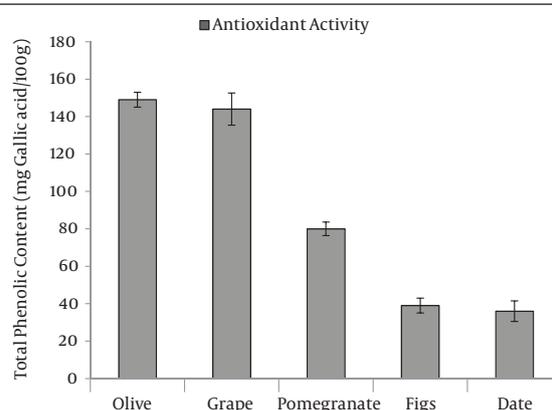


Figure 1. The Amount of Total Phenol Based on the Mg Gallic Acid/100 g Fruit by Folin-Ciocalteu Method in Hydroalcoholic Extract of Olive, Grapes, Pomegranate and Date Palm

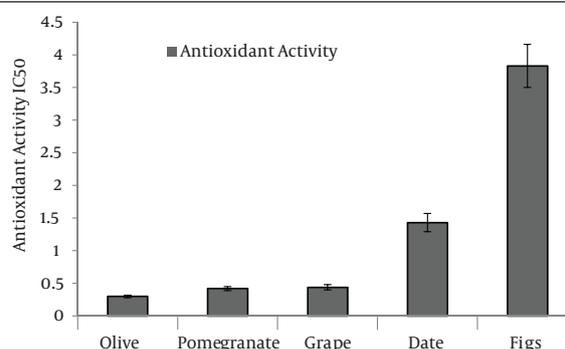


Figure 2. The Amount of Antioxidant Activity Based on IC_{50} In Diphenyl Picrylhydrazyl Test in Hydroalcoholic Extract of Olive, Grapes, Pomegranate and Fig

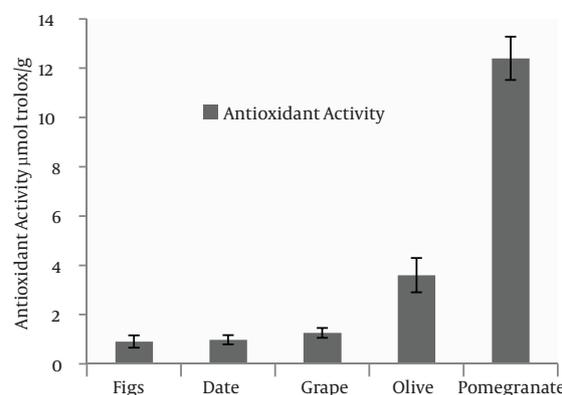


Figure 3. The Amount of Antioxidant Activity Based on the Trolox $\mu\text{mol/g}$ in Trolox Antioxidant Activity in Hydroalcoholic Extract of Olive, Grapes, Pomegranate, Date Palm and Fig

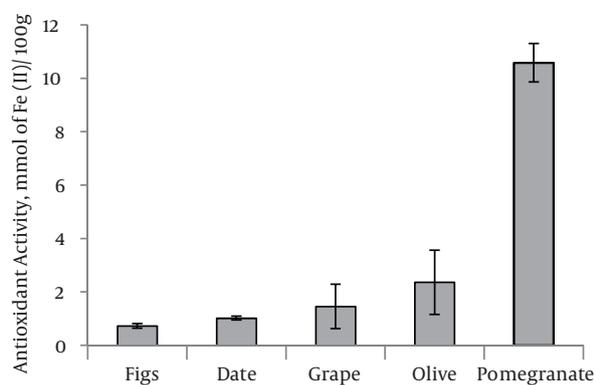


Figure 4. The Amount of Antioxidant Activity Based on Fe Mmol/100 g in Antioxidant Potential of Iron Restoration of Hydroalcoholic Extract of Olive, Grapes, Pomegranate, Date Palm and Fig

5.1. Fig

It is laxative, digestive and expectorates sputum. Conserved raw fruit with other foods causes the breast milk increase and has energetic property. Roasted fig is laxative and is used to treat gingivitis and obsess. Dried fig is one of the important commercial goods and its extract is laxative and useful for the young and adults. Fig removes the kidney and ladder stones. It relieves dyspepsia and anorexia and is used to treat hemorrhoid (12). In the first verses of Quran, in Al-tin Surah, the pharmaceutical benefits are suggested so that in verses 1-4, the fruits like fig and olive are mentioned (10). Fig is one of the five plants mentioned in Quran along with olive, grapes, pomegranate and date palm (13). According to Ahadith, when the figs were given to Prophet Mohammad (peace be upon him), he distributed them among his entourage and recommended to eat fig that treats most of diseases (13). Prophet Mohammad emphasized to eat fig because it is helpful in treating diseases like hemorrhoid and rheumatism (14).

5.2. Olive

Olive is one of the most important trees mentioned in holy books like Quran, Bible and Torah. This plant is found in Iran and adjacent countries. Today, it is demonstrated that using olive reduces the amount of lipid especially cholesterol due to its unsaturated fatty acids. Olive oil is more valuable than olive extracted from other plants since it has unsaturated fatty acids such as oleic acid and linoleic. According to the laboratory findings, it was demonstrated that using olive increases HDL (good cholesterol) which is important factor to prevent from the cardiovascular diseases, so the physicians recommend using olive oil to prevent from heart attack and stroke (15). Using fruit and oil of olive is beneficial to strengthen muscles and slows down the aging process. Olive is helpful for treating the diseases like tuberculosis,

eczema, kidney pain, pancreas, flue and respiratory diseases (16). Also, messaging with olive oil strengthens the muscles and other parts of body and reduces the pain, rheumatism and sciatic. Olive is used to treat ascites and excretes the kidney stone (16). In verse 99 of Al-Anam, verse 11 of Al-Nakhl and verse 35 of Al-Noor, the creation of different kinds of fruits such as olive, grapes and date palm is mentioned (10). In a hadith by Prophet Mohammad, he said: eat olive and rub it on your body since it is helpful for treating seven types of diseases such as leprosy (16, 17). As the olive and fig trees have many benefits and consist of compound which is common with biological structure, God mentioned the name of fig and olive along with human (17).

5.3. Pomegranate

It is the valuable food. It invigorates the cardiac patients and is effective to relieve the gastritis and cardiac pain (16). Pomegranate juice is a cooling beverage and it removes thirst. It is a useful drug for removing diarrhea. Pomegranate is effective for treating diseases like hepatic disease, hemorrhoid, anemia, jaundice, blood pressure increase, the optical disease, tooth pain and rheumatism (16). Consuming pomegranate juice with honey is effective for treating jaundice. In homeopathic medicine, the pomegranate is prescribed to cure many diseases. The pomegranate peel keeps the quality of pomegranate for a long time so that it can be kept for six months (16). All parts of this plant have unnatural alkaloids called Pelletierine which causes the tapeworms be paralyzed and remove easily from the body. Pomegranate has astringent property and it's used to remove fever in diseases like jaundice. The dried pomegranate peel is used to cure diarrhea and it is a specific drug for removing infection caused by tapeworms (12). In verse 99 of Al-Anam, God's power in creating pomegranate with the right order of seeds was mentioned (10). Verse 141 of Al-Anam mentions the creation of different kinds of foods such as olive, pomegranate (10).

5.4. Grapes

It creates heat in body. With various species of grapes, types of dehydrated products are produced. Grape is a nutrition source and it is almost laxative. It reinforces body against different diseases, especially the digestive system and hepatic. As the nutrients in grapes looks like the blood plasma, it is used for detoxification. It was determined that having diet with grapes is useful for curing the inactivity of liver. Dried grape causes relaxation, makes body cool, excretes sputum, and relives pain and is laxative (12). Raisins have more antioxidant compounds compared to grape. The fresh grape has the cooling properties, removes kidney stone, widens the veins and is anti-hemorrhoids and is used for curing the capillary fragility. Grape makes body relax and reinforces the brain and muscle. It is useful for stomach diseases, pain, cough,

kidney diseases, lung diseases and it is anti cancer (12). In verse 91 of Al-Asra and 67 of Al-Nahl, verse 6-19 of Al-Mumenoon and verse 34 of Yasin. The fruits like date palm and grape are suggested, and this is the obvious sign for thoughtful people (10).

5.5. Date Palm

Date palm plays important role in human history and its importance is due to the fact that in Quran, it is mentioned more than 20 times so that in verse 23 of Maryam, it was suggested for three times. The energy resulting from eating palm is three times more than other grains (10, 18, 19). Based on the findings, palm consists of stimulators which strengthen the womb muscle in the last days of pregnancy, on one hand, it expands the cervix during childbirth and on the other hand, it causes the bleeding reduce after giving birth (16). Palm causes the depression reduce and increases the breast milk because of its useful compounds and it is the best food during breast feeding period. It is a good source for preventing from many diseases. Today, the nutritionists recommend that the active children eat palm (16). Palm is useful for cardiac diseases, skin, kidney inflammation, intestine pain, heart attack, wound healing, diarrhea, birth giving pain, sexuality reinforcing, stomachache relieving, anti hemorrhoids, body strengthening and it relieves the liver pain (16). In verse 25 of Maryam, verse 11 and 67 of Al-Nahl, 91 of Al-Raad, 11-28 of Al-rahmam, 141 of Al-Anam and 34 of Yasin, it is mentioned that certainly, there are signs for the people who ponder in creation of olive, date palm and grape trees (10). Verse 9 of Al-Anam suggests the creation of different types of food such as olive, grape and palm (10). Prophet Mohammad emphasized the importance of palm and its effects on the embryo growth resulting from nutritional significance of palm. For this reason, he recommended to give women date palm. According to his sayings, all of diseases are curable except aging (16). He used palm as drug to remove cardiac disorders and also the modern medicine accentuates the effect of palm on respiratory diseases. In another saying from prophet Mohammad, he said: eat ripe palm with water melon because the coldness of one of them effects on the warmness of another and conversely the warmness of one of them causes the coldness of the other remove (16).

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