Review

Nutritional value and health implications of traditional foods and drinks consumed during Ramadan: A narrative review

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Abstract. Ramadan is a holy month of fasting for Muslims all over the world. It obligates a type of intermittent fasting from dawn to sunset. In oriental countries, Ramadan is linked to special foods and drinks like ingestion of dried fruits e.g. dates, apricot, figs, raisins and nuts; drinks e.g. carob, tamarind, hibiscus, sobya, doum, lemon, and licorice; foods e.g. yoghurt, beans and sugar rich desserts (kunafa and qatayef). Traditionally, these dietary habits are thought to improve vitality, but they were scarcely tested in scientific manner. Is there a health impact of oriental drinks and foods commonly used in Ramadan? This was the research question of this review. In our search strategy, we used these dietary elements as key words in; Cochrane library, Web of Science (WoS), Ovid, SienceDirect, Scopus, Directory of Open Access Journals (DOAJ), EbscoHOST, ProQuest, Institute for Scientific Information (ISI), EBESCO, Midline/PubMed, Egyptian knowledge bank (EKB), Google scholar, or Research Gate. We reviewed studies focusing the impact of each drink or foodstuff on health regardless of the fasting state. Studies focusing chemical structure or agricultural issues were not included. Among the foods and drinks evaluated, ingestion of dried fruits (dates, apricot, figs, raisins), nuts, carob, tamarind, hibiscus, sobya, doum, lemon, yoghurt, beans, were found not only tolerable but also beneficial among healthy subjects and patients with chronic diseases. The intake of licorice and sugar enriched desserts (kunafa and qatayef) should carefully be revised for patients with hypertension and diabetes due to slat retaining effect and high sugar content respectively.

Key words: ramadan; oriental foods; oriental drinks; dates, diabetes, licorice.

Introduction

Ramadan is a holy month for Muslims around the globe. During this month individuals abstain from eating and drinking between dawn and sunset. The first meal at time of sunset breaking the fasting is called "Iftar", and the last consumed at the time of dawn is called "Sohour", and in between them they are free to eat and drink.

In the oriental communities, Muslims and even non-Muslims residing in the area retain certain dietary habits and behaviors during Ramadan. Most of these

dietary traditions have no religious root, but are widely prevalent. There are inherited believes among residents in these areas that these popular drinks and foods improve vitality and power of observers during fasting time, and are linked to many health benefits (1,2). Such believes were scarcely tested in scientific manner. This is the rationale to carry out this review aiming at answering the following research question: Is there health benefits or risks for the common oriental drinks and diet commonly used in Ramadan?

Methods

In our search strategy, we used these relevant keywords: fasting Ramadan; and oriental foods; dates, Qamar el-deen, Khoshaf, Hibiscus, Sobya, Licorice, Carob, Tamarindus indica, Doum, citrus Lemon, Kunafa, Qatayef, Yogurt, Beans; and health benefits or hazards compared to none use.

We searched databases including; Cochrane library, Web of Science (WoS), Ovid, ScienceDirect, Scopus, Directory of Open Access Journals (DOAJ), EbscoHOST, ProQuest, Institute for Scientific Information (ISI), EBESCO, Midline/PubMed, Egyptian knowledge bank (EKB), Google scholar, and the Research Gate. Only few high evidence level studies (systematic reviews, meta-analysis, reviews and randomized controlled trials) were available for some drinks. These studies are shown in table (1). However, many studies focusing the individual components of each drink, food and sweet in relation to health and disease state were available and reviewed in this study.

Dates Fruit

Date palms grew in the Middle East area for decades. Dates fruits and their products are readily available in different forms. It is a common tradition for Muslims to consume dates during Ramadan, mainly at the time of breaking fast (Iftar), either alone or with other food items.

The dates are available for consumption at different stages of ripening and maturation. The first form is Khalal or Bisr (it is the mature but unripe form with 50% moisture), Rutab (ripened with 30–35% moisture), and mature dried form Tamer (had 10–30% moisture) (3). There are also many types of dates distributed around the globe e.g. Khodry, Khalas, Ruthana, Sukkary, Sefri, Segae, Ajwa, Hilali and Munifi (4).

The fruit had sweet taste. The dried/dehydrated forms of dates (Tamer) are rich sources of sugar which constitutes up to 88% of its content mainly sucrose, glucose, and fructose with fructose to glucose levels of 1:1, fiber (6-12%). Consumption of 100 gm of dates provides 50–100% of the recommended dietary fiber intake (5). It contains also vitamins, minerals, and electrolytes (calcium, iron, fluorine, and selenium and low sodium), and also variable amounts of carotenoids, phenolics, flavonoids, protein (2-6%) and fat (0.2–0.5%). Dates have the highest concentration of polyphenols among the dried fruits (6).

Table 1. List of high evidence references used in this review

Type of study	Drink or Food	Reference
Randomized trial	Dried fruits	Viguiliouk etal.,2018(14)
Systematic review	Dried fruits	Mossine etal., 2020(19)
Systematic review and meta-analysis	Hibiscus	Serban etal., 2015(24)
Systematic review and meta-analysis	Hibiscus	Najafpour etal., 2020(25)
Randomized controlled trial	Licorice	Raveendra etal., 2012(34)
Systematic review and meta-analysis	Licorice	Penninkilampi etal., 2017(39)
Narrative review	Tamarindus indica	Komakech etal.,2019(55)
Narrative review	Citrus limon	Klimek-Szczykutowicz etal.,2020(62)
Systematic review and meta-analysis	Dietary glycemic index	Ojo O etal., 2018(67)
Critical review	Yogurt	Fernandez etal., 2017(69)

Because of its peculiar chemical composition many studies have shown that date fruit has antioxidant, antimutagenic, anti-inflammatory, gastroprotective, hepatoprotective, nephroprotective, anticancer, immunostimulant and sex hormone modulating activities (7,8).

Owing to the significant fructose content of dates with its more sweetener effect and less rapid absorption in comparison to glucose, dates have low-to-medium glycemic index (GI) values that range between35 and 55, with an average of 42 (9). Furthermore, there is evidence of its beneficial effect in on the glycemic and lipid control of among diabetic patients (10) with possible reduction in cardiovascular risk factors (11,12). Hence, it seems safe during Ramadan to consume dates fruit in healthy subjects and patients with different diseases including patients with diabetes.

Qamar el-deen

Qamar el-deen is a dried apricot based oriental drink. It is very popular drink during Iftar in the holy month of Ramadan despite rarely used in the rest of the year. One serve of Qamar el-deen (100gm) contains 10 grams of carbohydrates and gives 38 Kcal energy, but calories could be higher due to added sugar. Fresh apricots are antioxidant-rich fruit due to its high melanoidins and rutin content. It is also rich in soluble fibers which lower blood cholesterol levels, potassium which help in protecting heart and controlling hypertension, beta carotene which prevent age-related macular degeneration, and many vitamins and minerals including calcium, iron, magnesium, vitamin C, and folate. Dried apricots provide the same nutrients as the fresh one but in higher concentrations (13).

The co-administration of dried apricots with white bread was found to lower the glycemic response of white bread and improve post-prandial glycemia (see later) (14).

Qamar el-deen may be used as cold drink or cooked with starch. Interestingly, heat-processed apricots does not loss its antioxidant properties (15).

Despite its numerous benefits, it should be noted that commercially dried apricots may be treated with sulfur-containing compounds during processing, and sulfites may cause harm to healthy gut bacteria. In addition, apricots are naturally high in fermentable oligo-, di-, mono-saccharides and polyols components (FODMAPs), which are poorly digested in irritable bowel syndrome (IBS) (16).

Consequently, the consumption of Qamar el-deen seems to be beneficial for most healthy and diseased patients including diabetic patients; if no added sugar. However, Patients with IBS better avoid Qamar el-deen to avoid bloating. _

Khoshaf

The drink "Khoshaf" or "Al-khoshaf" is a cocktail of dried fruits, nuts, and sugar with water. It seems that this drink is linked to Ramadan time in Arabic, Turkish and Persian cultures. There were no research data regarding this peculiar drink in relation to Ramadan time. However, many components of this drink have been studied for presumable health benefits among both apparently healthy subjects and persons with different diseases.

To extend its shelf life and its availability throughout the year, fresh fruits are dried. The conventional dried fruit combinations in Khoshaf include apricot, figs, raisins, sultanas, apples, currants, peaches, pears, prunes, and dates in different combinations. All these are rich sources for sugar, fibers, vitamins, and minerals (potassium, magnesium, calcium, zinc, sodium). Dried fruits are mainly composed of carbohydrates (Range: 61.3–72.8%). They have a low content of protein (Range: 0.17–4.08%) and a fat content of less than 1% (17).

Raisins among other dried fruits was found to be beneficial for postprandial glucose regulation and glycaemic control in type 2 diabetes patients (17).

Dried apricot was safe, desirable, associated with decreased glucose concentration, and reduction of diabetes related complications when consumed by type 2 diabetic patients. Its effects are attributed to its antioxidant activity and hypoglycemic effect compounds like anthocyanin, procyanidin, and carotenoids (18).

A recent systematic review of observational studies showed that consumption of dried fruits mainly raisins may be associated with a lower incidence of digestive system cancers and mortality (19).

Dried figs had antioxidant properties that can enrich lipoproteins in plasma and protect them from

subsequent oxidation (20). Furthermore, figs are rich in potassium with low sodium content. Hence, its use is safe in patients with hypertension.

Moreover, the combination of four dried fruits (dates, apricots, raisins, sultanas) was shown to decrease postprandial glycaemia. Besides their low GI, they reduced the glycemic response of white bread through displacement of half displacing the half of the available carbohydrate (14).

Nuts refer to almonds, Brazil nuts, cashews, hazelnuts, macadamias, peanuts, pecans, pine nuts, pistachios and walnuts. Although peanuts are actually classified as legumes because of their similar nutrient composition and their proven cardiovascular health benefits, they are commonly regarded as being a nut. Nuts contain a high amount of; total fat (Range: 43.9–78.8%), unsaturated fat (monounsaturated fatty acids + polyunsaturated fatty acids (PUFA), Range: 31.6–62.4%), a relatively low amount of carbohydrates (Range: 11.7–30.2%) and vegetable protein (Range: 7.9–25.8%). they are rich in fibers and minerals (17).

Both in animal studies, epidemiological studies and in clinical trials the use of nuts have been associated with lower risk of T2D. Its use decreased; insulin resistance, levels of inflammatory markers, postprandial glycaemia, glycated hemoglobin (HbA1c) concentrations and improved lipid metabolism.

The exact mechanisms behind these beneficial effects have not been fully elucidated. However, the considerable amount of fiber in nuts and dried fruits together with the complex carbohydrates is associated with increased insulin sensitivity and reduced plasma insulin levels, promoting better glycaemic control in diabetic patients. Soluble fiber increases gastric distension, viscosity in the gastrointestinal tract, and slower absorption of macronutrients (17, 21).

So, consumption of Khoshaf during Ramadan seems beneficial for healthy subjects and patients with chronic diseases including patients with diabetes provided no added sugar.

Hibiscus

Hibiscus sabdariffa L. (HS, roselle; Malvaceae) is widely grown in many Eastern countries (Upper Egypt ,Sudan, Syria and Iraq). It has been used traditionally as a food, in herbal drinks, in hot and cold beverages, as a flavoring agent in the food industry and as herbal medicine (22). This plant is often used in the traditional medicine being rich in phytochemicals like polyphenols especially anthocyanins, polysaccharides and organic acids thus having enormous prospective in modern therapeutic uses (23). Extracts showed antibacterial, anti-oxidant, nephro- and hepato-protective, renal/diuretic effect, effects on lipid metabolism (anticholesterol), anti-diabetic and anti-hypertensive effects. This might be linked to strong antioxidant activities, inhibition of α-glucosidase and α-amylase, inhibition of angiotensin-converting enzymes (ACE), and direct vaso-relaxant effect or calcium channel modulation (22).

Serban et al., found a fixed-effect meta-regression indicated a significant effect of H. sabdariffa supplementation in lowering both systolic blood pressure (SBP) (weighed mean difference -7.58 mmHg, 95% confidence interval -9.69 to -5.46, $P < 0.00001$) and diastolic blood pressure (DBP) (weighed mean difference -3.53 mmHg, 95% confidence interval -5.16 to -1.89, $P < 0.0001$). These effects were inversely associated with baseline BP values, and were robust in sensitivity analyses (24).

In a recent systematic review carried out by Najafpour Boushehri et al.; they found that pooled effect size demonstrated that HS consumption significantly reduces fasting plasma glucose (-3.67 mg/dl, 95% confidence interval, CI [-7.07, -0.27]; I2 = 37%) (25).

Hopkins et al., found in their comprehensive review that over half of the RCTs showed favorable influence on lipid profiles including reduced total cholesterol, LDL-C, triglycerides, as well as increased HDL-C due to daily consumption of HS tea or extracts (26). H. sabdariffa derived bioactive compounds which can help reduction of body weight, inhibition of lipid accumulation and suppression of adipogenesis through the PPARγ pathway and other transcriptional factors (27).

Hibiscus extract was able to selectively induce apoptosis in both triple-negative and estrogen-receptor positive breast cancer cells in a dosage-dependent manner. It was able to modulate oxidative stress and decrease mitochondrial membrane potential compared to individual treatments. Authors concluded that Hibiscus

extract could be used as an adjuvant to reduce chemotherapy dosages and related toxicity (28).

So, Hibiscus is safe and even beneficial to consume by healthy persons and patients with chronic diseases.

Sobya

Sobya is a lovely traditional fermented drink made from rice or barley, milk, coconut powder or cinnamon, cardamom, brewer's yeast and sugar. Flavored with vanilla, it is served very fresh, with crushed ice. This delicious starchy milk drink is super popular in Egypt and the Hijaz region of Saudi Arabia. Sobya can be white (like in Egypt) or dyed red (like in Saudi Arabia). It is traditionally prepared in Egypt by soaking powdered rice (powdered barley with few brewer's yeast in Hijaz) over night (this is where the starch comes from), then mixing it with coconut powder, milk (in Egypt), cinnamon, cardamom (in Hijaz) and sugar.

Sour Sobya contain specific strains of lactic acid bacteria (LAB) which contribute to their health effects. The oral administration of some strains of LAB (*L. plantarum*) to humans was capable to break down phenolic acids and hydrolysable tannins into phenolic metabolites that are more easily absorbed in the body and enhancing the gut antioxidative effects (29-31). There is no evidence to recommend against the consumption of this drink by neither healthy subjects nor patients with different diseases.

Licorice

Licorice (liquorice) has been used as a medicinal agent in a number of cultures dating back to ancient Egypt and China (32). Traditional practitioners believe that licorice root can improve bronchitis, constipation, heartburn, gastric ulcer, eczema, and menstrual cramps. Although licorice is generally safe to use, the overconsumption can lead to severe side effects and even poisoning (33).

Licorice has many brand names; Glycyrrhiza glabra , or Glycyrrhiza uralensis, Alcacuz, Sweet Root, and Gan Zao that contains glycyrrhizic acid (GZA). It grows in subtropical climates in Europe, Middle East, and Western Asia. Licorice extracts and its principal component, glycyrrhizin, have extensive use in foods, tobacco products, snuff, and in traditional and herbal medicine (32).

Although the research is limited, studies suggest that Licorice may offer certain health benefits, primarily related to the digestive tract (34).

The beneficial effects of licorice can be attributed to a number of mechanisms. Glycyrrhizin and GZA have been shown to inhibit growth and cytopathology of numerous RNA and DNA viruses. Glycyrrhizin and its metabolites inhibit hepatic metabolism of aldosterone and suppress 5-ß reductase, properties responsible for the well-documented pseudoaldosterone syndrome. The similarity in structure between glycyrrhetic acid, and hormones of adrenal cortex accounts for the mineralocorticoid and glucocorticoid activity of GZA. Licorice constituents also exhibit steroid like anti-inflammatory activity, similar to the action of hydrocortisone. In vitro research demonstrated that GZA inhibits cyclooxygenase activity and prostaglandin E2 formation, and indirectly inhibits platelet aggregation (35).

Licorice supplementation is commonly associated with elevated blood pressure. This may be due to its effect on renin-angiotensin-aldosterone system. It is suggested that licorice saponins are capable of potentiating aldosterone action while binding to mineralocorticoid receptors in the kidneys producing pseudoaldosteronism phenomenon. In addition to hypertension, patients may experience hypokalemia and sodium retention, resulting in edema. All symptoms usually disappear with discontinuation of therapy intake. Generally, the onset and severity of symptoms depend on the dose and duration of licorice intake, as well as individual susceptibility. Patients with delayed gastrointestinal transit time may be more susceptible to these side effects, due to enterohepatic cycling and reabsorption of licorice metabolites. The amount of licorice ingested daily by patients with mineralocorticoid excess syndromes appears to vary over a wide range, from as little as 1.5 g daily to as much as 250 g daily (35-36).

Licorice syrup has the ability to preserve water inside the body, and thus help person to overcome the feeling of thirst during the fasting period in Ramadan especially in the summer.

On the other hand, licorice contains cortisone similar compounds, which negatively affect diabetic patients, glaucoma patients, hypertensive and cardiac patients. Consumption of licorice also causes disturbance in the concentration of mineral salts in the blood, resulting in damage to the kidney function. So, renal patients especially of old age are advised to avoid consuming licorice in all its forms (36).

As Licorice can reduce the serum testosterone level, probably by blocking 17-hydroxysteroid dehydrogenase and 17,20 lyase (37). Excess licorice drinking in men, may be associated with loss of sexual desire. On the contrary, licorice may be an adjuvant therapy of hairsutism and polycystic ovary syndrome. Nevertheless, women are not advised to drink large quantities of licorice as it increases menstrual symptoms by trapping body fluids. Pregnant and breastfeeding women should avoid it. It can cause low levels of potassium in the blood resulting in muscle weakness. It is not suitable also for patients with hormone sensitive neoplasms such as: breast cancer, uterine cancer, ovarian cancer, endometriosis, and benign fibroids (38). In one of our reports we showed that licorice consumption among patients with liver cirrhosis and patients receiving certain medications should be revised due to salt and water retaining effects and possible drug interactions respectively (2).

The exact amount of ingested GZA that produces mineralocorticoid toxicity is unclear. A meta-analysis to assess the effect of chronic ingestion of licorice found the mean daily dose of GZA across 18 studies was 377.9 mg, which is approximately 189 g of black licorice a day, assuming 2.0 mg g–1 (0.2% w/w) GZA in black licorice. However, the concentration of GZA changes significantly dependent on the product. Licorice findings range between 0.26 and 7.9 mg g–1, while in health products the range was 0.30 to 7.9 mg g–1. A typical pack of licorice allsorts was found to contain 91.0 mg, a serving of licorice tea contained 20.0 mg and a single licorice pipe contained 4.6 mg. With only limited and sporadic consumption of licorice, it would be difficult to ingest more than 500 mg of GZA per day. Assuming an average concentration of 2.0 mg g–1 for black licorice confectionery, it would require consumption of 250 g per day to reach 500 mg of GZA daily. While this quantity is relatively high, but as evidenced by numerous case reports, a small portion of the population does consume licorice at these levels (39).

In conclusion, the presumable health benefits of licorice and its anti-thirst properties favor its intake by residents of the oriental communities especially during Ramadan time. However, caution should be taken for patients with hypertension, diabetes, cirrhosis, renal medical diseases, impotence, pregnant and lactating ladies, and patients with hormone sensitive neoplasms.

Carob

Carob is a natural food that comes from a plant, Ceratonia siliqua. It is a leguminous evergreen shrub or tree of the family Leguminosae (pulse family) native to the eastern Mediterranean (40).

In the 13th century, different cultures started using carob as their primary source of sugar. The fruit is an indehiscent pod, elongated, compressed, straight or curved, thickened at the sutures, 10–30 cm long, 1.5–3.5 cm wide, and about 1 cm thick. In many Mediterranean countries the fruit is used in popular beverages and confectioneries.

In Egypt, crushed pods are heated to caramelize its sugar, and then water added and boiled for some time. The result is a cold beverage, also called kharrub, which is sold by juice shops and street vendors, especially in summer and during Ramadan time (41).

Carob fruits have high sugar content (48%–56%) (Mainly sucrose, glucose, and fructose), 3%–4% protein, a low-fat (0.2%– 0.6%) (42), low content of alkaloids, and high content of dietary fibers, especially in the seeds (43). Specifically, the pulp is composed of sugars, polyphenols (e.g., tannins, flavonoids, phenolic acids), and minerals (e.g. K, Ca, Mg, Na, Cu, Fe, Mn, Zn), whereas the seed contains proteins, dietary fibers, polyphenols, and minerals and is free of gluten (44).

Carob powder is a valuable source of vitamins E, D, C, Niacin, B6, and folic acid while vitamins A, B2, and B12 are provided in lower levels. Carob powder oil is composed of 17 fatty acids, mainly oleic, linoleic, palmitic, and stearic acid at 40.45%, 23.19%, 11.01%, and 3.08%, respectively (45).

A number of cyclitols are also present in carob beans. The major cyclitol is D-pinitol (3-O-methyl-D-chiro-inositol) with multiple health benefits. Many studies showed anti proliferative and apoptotic activity of Carobs against cancer cells. Carobs are also suggested to treat diarrhea symptoms, and possess anti-hyperlipidemia and anti-diabetic effects due to their high antioxidants, polyphenols, and high content in fibers (46) rendering them suitable for people with diabetes (45). Carob flour (from carob seeds) is used to manufacture gluten free dietetic products for celiac patients (47).

So, Carob seems safe to consume during Ramadan by healthy subjects, diabetic and celiac patients.

Tamarind Juice

Tamarindus indica, known as "Tamarind", is a proverbial worldwide herbal medicine. A podded fruit constitutes pulp, seeds, shell and fibers. The pulp obtained from tamarind fruit is mostly consumed fresh, is made into juice or tea, and is used in the preparation jams and sweets (48).

Tamarind contains several essential amino acids, hence it is beneficial for healthy and strong muscles. It is also rich in carbohydrates and minerals like Ca, K, P, and Mg beside smaller amounts of vitamin A and iron. The pulp is also rich in organic acids particularly tartaric acid which gives the pulp acidic taste, plus citric, acetic, malic acid, succinic and formic acids (48,49).

It has major antioxidant effects, being rich in flavonoids and polyphenols [50]. It is also useful for nonalcoholic fatty liver disease (NAFLD) and inflammatory bowel disease (IBD) (50). Its antimicrobial effect is attributed to the presence of tannins, terpenoids, and citric acid (51). Tamarind (as a fruit) has low glycemic index and glycemic load, making it suitable for patients with diabetes (52). It has hypolipidemic activity (53). Its intake delayed the progression of fluorosis in humans by enhancing the urinary excretion of fluorine (54).

Pharmacological studies have proved the anti-inflammatory and analgesic activities of different parts of tamarind. Its bioactive compounds including alkaloids, flavonoids, tannins, phenols, saponins, and steroids, has the ability to inhibit a number of biological pathways including tumor necrosis factor KB activation pathways, and leukotriene biosynthesis resulting in potent anti-inflammatory effect. Its analgesic activity is related to activation of central and peripheral opioidergic mechanism and inhibition of the prostaglandin pathways (55).

Consequently, it seems safe and even beneficial to consume Tamarndi by healthy subjects and people with different diseases.

Doum Drink

The Doum palm (Hyphaene thebaica) has edible oval fruits. Doum is one of the traditional beverages in subtropical countries including Egypt and is rich in polyphenolic compounds. Doum fruit extracts was found to contain high amount of flavonoids, phenols with proved antioxidant and antibacterial activities (56). Doum extracts were traditionally used in the treatment of hypertension, dyslipidaemia and as anti-hematinic agent. They improve the hepato-renal functions as well (57).

Supplementation with Doum induced a significant decrease in both systolic and diastolic blood pressure, total cholesterol, triglyceride and LDL- cholesterol with concomitant increase of the HDL-C (57,58).

Consequently, it seems beneficial to drink Doum by healthy subjects and people with hypertension and dyslipidemia.

Lemon Juice

Citrus Lemon is an important medicinal plant. It belongs to the family of Evergreen tree species named as Rutaceae that is primarily originate in North East India (59,60). Its juice is helpful in reducing fever (60), and blood pressure (59). Lemon was proved to be more beneficial when added with honey for sore throat and water for reducing weight. With no reported side effects (60). It is inexpensive, easy and quick way to cure many aches and even diseases (59). The plant is a potential source of vitamin C, and the oil is used in various preparations to reduce skin itching, and for skin nourishment. The pulp left after extraction of the juice is reported to be used for the treatment of pimples

and wrinkles and to soften facial skin (61). The citrus Lemon juice (1ml/kg/day) revealed a significant reduction in serum cholesterol, triglycerides; LDL, and increase in HDL. These effects are attributed to its antioxidant effect. Lemon has numerous embellished nutrients like citric acid, vitamin C, alkaloids, flavonoids, micro minerals, and some trace minerals. Lemon was used as remedy for cancer, UTI, fever, and skin diseases like acne. It balance blood pressure and water level in body. It stimulates the metabolism, aids the digestive tract, and relives the pain from bee sting and many more (61,62).

It seems safe and advisable to intake Lemon by healthy subjects and patients with different diseases not only during Ramadan time.

Kunafa

Kunafa is a traditional oriental dessert which is served in Ramadan. It is made with shredded filo pastry, or alternatively fine semolina dough, which is semi cooked to be further processed. The semi cooked dough (Kunafa strings) is mixed with a generous amount of butter, or alternative fatty substance like oil or margin, layered with a wide variety of ingredients including one or mix of the following: cheese, clotted cream, nuts, raisin, and coconut. It is fully cooked in oven, then drenched with sweet sugar-based syrup. In some regions, whipped cream, jelly, or fresh or canned fruit are added as a topping. It worth mention that the word Kunafa can be used to point to this dessert with all ingredients, or to the dough only (63).

Due to this large variation in ingredients, it is so difficult to calculate the caloric content of Kunafa (a 3x3cm slice of traditional Egyptian Kunafa contains 255kcal, with about 16 gm fat, 26 gm carbohydrates, and only 2gm protein, while same weight of Syrian Kunafa contains only 200calories, with 10 gm fat, 24gm carbohydrates, and 4gm protein, which mirrors the difference in ingredients used -mainly nuts- in the recipes).

Qatayef

Qatayef is another famous Ramadan dessert. It is usually made out of flour, water, yeast, and sometimes sugar is added, and formed as pancakes which is cooked on one side only. These pancakes are stuffed and folded. The pastry is filled with either unsalted sweet cheese, or a mixture of any of hazelnuts, walnuts, almonds, pistachios, raisins, coconut, and powdered sugar. It is then deeply fried and lastly, served with a sugar based syrup or honey. Another way of serving Qatayef is by filling it with salty chees, whipped cream, or clotted cream after frying without syrup (64). One piece of Qatayef stuffed with nuts contain 324 Kcal, with 57gm cabs, 9.6gm fats and 4.8 gm protein.

It is obvious that the ingredients of both of Kunafa and Qatayef dessert carry great variability with subsequent variable caloric breakdowns. However, they are always high caloric food with high glycemic both index and load. Carbohydrate quality and quantity modified the risk of T2D by ameliorating gene expression (65). The development and poor control of T2D was linked to diets of high glycemic index and load (66,67). On the other hand, recent study in 2021 demonstrated that higher consumption of nuts may reduce the risk of metabolic syndrome (68).

So, we can conclude that: Kunafa and Qatayef are not preferred for diabetic patients or patients with impaired glucose tolerance due to their high glycemic index and load. For healthy subject, it is better to consume Kunafa and Qatayef recipes with lot of nuts and pay attention for his daily total calories to avoid obesity.

Yogurt

Yogurt contains a multitude of nutrients that have the potential to act in a functional manner on the different body systems (69).

Eating a cup of yogurt on sohour is a common practice in Ramadan based on many presumable health benefits; yogurt is a great source of protein. It helps to get rid of irritable belly bloating, because it improves gut microbiome. It can heal gum infections, and protect from teeth decay and minimize halitosis during fasting. Yogurt contains lactic acid which is responsible for renewing the skin, as well as calcium and vitamin D which are very important for bones. It flushes out excessive sodium, because it contains a high percentage of potassium, it also contains many beneficial minerals and vitamins; such as magnesium, zinc and vitamin B12 (69, 70).

Fava (broad) beans

Ramadan nutrition planning (RNP) is encouraged as per diabetes and Ramadan (DAR) guidelines, which take into consideration variations in cultural food choice and calorie consumption (71).

Broad beans have high protein and energy as in any other beans and lentils, with 341Kcal/100gm beans. Besides, they combine plentiful of health-benefiting antioxidants, vitamins, minerals, and plant sterols (72). Beans are rich source of dietary fibers (66%) which act as a bulk laxative, protect colonic mucosa by decreasing its exposure time to toxic substances, adsorb carcinogens helping its excretion, and reduce blood cholesterol levels by decreasing re-absorption of cholesterol binding bile acids in the colon (73).

Broad beans are rich in phytonutrients such as isoflavone and plant sterols. Isoflavone such as *genistein* and *daidzein* have been found to defend breast cancer in laboratory animals. Phytosterols, especially *ß-sitosterol*, help to lower cholesterol levels in the body (74).

Fava beans contain Levo-dopamine, a precursor of neuro-chemicals in the brain such as dopamine, epinephrine, and nor-epinephrine. In the brain, dopamine is associated with the smooth, coordinated functioning of body movements. Thus, consumption of adequate amounts of fava beans in the everyday diet may help prevent Parkinson's disease and dopamine-responsive dystonia disorders (74).

Fresh fava beans are an excellent source of folates. Whole daily needs of folates can be provided in 95 gm of beans. Folate and vitamin B-12 are essential components of DNA synthesis and cell division. Adequate folate in the diet around conception, and during pregnancy may help prevent neural-tube defects in the newborn baby (74).

Beans are rich in vitamin B6 (pyridoxine), B1(thiamin), B2(riboflavin) and niacin; which function as coenzymes in most cellular metabolic pathways, and minerals like iron, copper, manganese, calcium, and magnesium. Fava is one of the highest plant sources of potassium. It helps counter pressing effects of sodium on heart and blood pressure (74). Also, beans provide protein, energy, dietary fiber, phytonutrients, vitamins and minerals. Its use during Ramadan can ameliorate the effects of fasting on activity and energy expenditure (75). On the other hand, consumption of bean can induce severe hemolytic anemia in patients with favism or glucose-6-phosphate dehydrogenase deficiency (G6PD) (76).

Summary

There are many oriental dietary habits which include intake of certain popular drinks, deserts and foods during Ramadan time. Among the foods and drinks which were evaluated in this review, the intake of licorice and sugar rich desserts (Kunafa and Qatayef) should carefully be revised for patients with hypertension and diabetes due to slat retaining effect and high sugar content respectively, also beans should be avoided in patients with G6PD. On the other hand, dried fruits; Dates, Apricot, Figs, Raisins and Nuts, and drinks; Carob, Tamarind, Hibiscus, Sobya, Doum, Lemon, and foods; Yoghurt, Beans, were found not only tolerable but also beneficial among healthy subjects and patients with chronic diseases.

This review focused Muslim individuals in the oriental communities due to the inherited dietary habits over centuries. However, the health implications retrieved from this review are applied to all subjects who consume the same or similar foodstuffs and drinks whatever the geographic location, ethnicity or religion. Furthermore, it seems that consumption of moderate amounts of these foodstuffs and drinks over a continuous period of at least one month is anticipated to have positive health implications.

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