Review Article
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Obesity and traditional nutrition: introduction of Turkish traditional foods, functional properties and biochemistry

Abstract

There are many problems that affected development of obesity. Some of these factors should benutrition habits and consumption trends of foods. Balanced and sufficient nutrition means intake of essential food compounds and protein with law caloric nutrients for healthy diet. Turkish traditional foods and nutrition trends can support to prevent obesity. Turkey has rich food varieties; most of them common foods whole the Anatolia, where in hosted lots of civilizations and mostly Turkish society. Foods are reflected culture of societies and have been formed long time during the historical periods. Turkey has kinds of food varieties in large scale. Some of them have functional effects to human health. These foods are consumed in all of the Regions of Turkey even in the World. Some of them are known and consumed in local regions of Turkey.These foods can be classified in a few groups. Such as Fermented milk products have natural probitioc bacteria. They are anticarcinogenic, antitumoral and cell defense mechanism developing, antimicrobial effect. Cooking of some herbs and spices and their products which have medicinal effects.There are sorts of nuts such as walnut, hazelnut, peanut, pistachio nut, almond. Nuts have much quantity polyunsaturated fatty acids, and they are in rich protein including some special amino acids like aspartic acid, glutamic acid added thse amino acids etc. Mediterranean diet and Black sea region diet that have vegetable, olive oil and fish are common especially in the sea sides of our country.The detailed summary of Turkish traditional foods against obesity and their functional properties and biochemistry reviewed by following literature.

Keywords: Turkish traditional foods, functional properties, biochemical effects, medicine nutrition and health

Volume 9 Issue 6 - 2019

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Received: November 18, 2019 | **Published:** December 10, 2019

Abbreviations: LAB, lactic acid bacteria; CLA, conjugated linoleic acids.

Introduction

Obesity is raising all over the World. The specialist investigates remedies for preventing and reducing of obesity. Fast food consumption, law economic subjects, nutrition habits and consumption with alienation from traditional food consumption etc. cause to obesity. There are some of Turkish food groups. One of them is Fermented Turkish foods have important and beneficial effects to health because of kinds of reasons. In the fermentation several bacteria speciesproduce biologically active peptides with enzymes such as proteinase and peptidase, and remove some non-nutrients. Among these peptides, conjugated linoleic acids (CLA) have a blood pressure lowering effect, exopolysaccharides exhibit prebiotic properties and many functional properties and help the prevent kinds of chronic diseases. It was reported biochemical positive effects of Lactic acid bacteria (LAB) and other contributed microorganisms.[1]In this review, it was examined Turkish traditional foods and nutrition habits by evaluating their biochemical and physiological properties in the food groups.

a. Group1. Fermented Turkish foods; yogurt, kefir, kımız, kinds of special cheeses, that are produced from milk. Fermented milk products have natural probiotic bacteria. They are anticarcinogenic, antitumoral and cell defense mechanism developing, antimicrobial effect. These group foods can provide curing effect against some disease like osteoporosis, reducing cholesterol, hepatic encefalopati, lack of renal functionality, dyheare, gastric ulcers as anti-helicobacter, preventing of radioteropetic curing side effects. The prepared boza was fermented and drinking as hot especially winter evening.

b. Group 2.Cooking of some herbs and spices and their products which have medicinal effects.

c. Group 3. Edible wild mushroom species common and specific varieties of Turkey areas.Group 2 and 3 have similar affects to human. They have the chemical compounds which are antioxidants, antimicrobials.

d. Group 4.“Pekmez”, English calling should be “Themolasses” which produced from fruits like mulberry, grape, fig, watermelon, apricot. Pekmez contains glucose, fructose or other sugars and some minerals, at the same time, there are some special foods produced from molasses.

e. Group 5. The foods that are in olive oil foods category. Olive oil consume especially in Eagan sea region of Turkey. Olive oil consumption can reduce cardiovascular risk disease.

Mediterranean diet contains vegetable virgin olive oile, table olive fruits, and fish. In Turkey olive produced as table olives such as black olive and green olive even filled with sorts of foods and species; red pepper, almonds orange skins. In the breakfast, olive consumption is essential and consumed whole the country, even in other meals. Mediterranean diet and Black sea region diet that including vegetable, olive oil and fish are common especially in the sea sides of our country. Anchovy is abundant fish type in Black Sea Region of Turkey where I was born in North of Turkey. It is prepared and produced in the foods such as Ancovy rice, in salted water as pikle etc. Sardine is consumed in Eagensea and reggean where I am living.Turkey is a peninsula, fish consumption is common even in side of country with fresh water fish species.

f. Group 6.The nuts; walnut, hazelnut, peanut, pistachio nut, almond. Nut have much quantity polyunsaturated fatty acids, and they are in rich protein including some special amino acids like arginine etc. and minerals like magnesium which have beneficial effects to blood pressure, heart diseases.

In Turkey, some nutrition habits can be evaluated in functional nutrition and anti-aging factors like drinking tea. Tea has catechins compounds, these phenols show strong antioxidant effects and can prevent coagulation of blood. It has chemo preventive effects like antimutagenic, anticarcinogenic and antimicrobial properties.The other food group is fresh vegetable salads with vegetable oil that had lots of vitamins especially vitamin C and helping digesting during meals.Tomato paste containing lycopene, is added to in every vegetable, legume and soups and macaroni sauces and bulgur dishes,in much quantity in cooked foods. Lycopene is the most potent antioxidant among the dietary carotenoids can inhibit the oxidation of DNA and LDL that associate with some cancer types and heart disease. The Turks who lived in Middle Asia called this beverage bassoi.Boza is a traditional Turkish beverage produced from by fermenting cereals by yeast and lactic acid bacteria thus, fermentation of millet, cooked maize, wheat, or rice semolina/flour.[2]Above mentioned introduced Turkish traditional food groups will be remedy when they consumed in healthy and safe conditions with other life factors such as exercise, body movement and clean environment. In the article detailed knowledge were explained by following literature.

Traditional foods and their functional properties and biochemical effects

Milk and cereal fermented foods yogurt

kefir and kımız have probiotic microorganisms.[3–5]There are scientific researches about fermented Turkish products, probiotics, which keep microbial balance or develop microbial flora in the intestine, are microbial living food additives.[6]Above mentioned foods contain probiotics essential amino acids; easy digestible properties, and in rich some minerals and vitamins[7,8]Lactic acid bacteria and yeasts were the important group of microorganisms associated with traditional fermented foods. These Turkish traditional foods were reviewed by the authors and beverages are produced at household level in Anatolia.[6]These include fermented milks (yoghurt, torba yoghurt, kurut, ayran, kefir, koumiss), which have curing and prevention effects of cardiovascular disease; probiotics can reduce total serum cholesterol level and low density lipoprotein.[9]Akalın[10]reported that reducing effects of the probiotics which contain *lactobacillus acidophilus*and *Enterococcus faecium*.Effective mechanism of probiotics that reducing cholesterol level, was not known well. It is estimated that probiotics bacteria degrade indigestive carbohydrates into small carbon chain. Fatty acids, which can absorb in the liver.[11]These bacteria can reduce methylglutaril-coenzyme A reductase level thus cholesterol level in the serum decreased, also increase forming bile acids from cholesterol.[12]Probiotics can show effective activity on prebiotics.[13,14] In intestine flora and curing and/ preventing disease yogurt and kımız, fermented products can have these bioactive subjects naturally, and some often consumed plant products like onion, legumes, cereals[13]Yoghurt bacteria are *S. thermophilus*and *L. delbrueckiisub sp. L.bulgaricus*. These are the main culture of yogurt.[14]Ayran is a fermented beverage which is traditionally produced by blending yogurt with water. Industrial production of ayran can be manufactured in two ways such as addition of water to yogurt or the addition of water to milk first and then fermentation of diluted milk.[15]

Yogurt and kefir and kımız originated from Caucasus. Kefir and yogurt has specific microorganisms, products CO_2lactic acid, acetic acid, ethyl alcohol.[16]These products have curing and preventing effects following diseases; lactose intolerance, osteoporosis, ulcer which cause by *Helicobacteria pylori.* Lactic acid bacteria produce some organic acids and forming bioactive peptides during fermentation, inhibit *H. pylori*. The other diseases are hepatic encephalopathy, chronic renal failure, dyhiare, side effects of radiotherapy, antitumoral effect, stimulating of immune system. At the same time, they are in rich B complex vitamins, Ca, P, Mg essential aminoacids and various enzymes, so high nutrition value.[3]

Tarhana, boza and shalgam

Tarhana is manufactured from yogurt, wheat flour, tomato and some spices mixtures than fermented, dried and ground and packed into suitable packs. Tarhana has untimutagenic effects.[17] Tarhana is a product of LAB with yeast fermantaion andgood source of B vitamins, minerals, organic acids, and free amino acids.[18] Bozais

fermented beverage prepared from some cereals like wheat, rice, corn etc. Boza consumed as hot and has beneficial effect to human. Shalgam is produced by lactic acid fermentation of amixture of turnips, black carrot bulgur (broken wheat) flour, salt and water.[14] Shalgam juice is a nutritional beverage that contains high mineral, vitamin, amino acid and polyphenol contents.[19,20]It has been reported to contain anthocyanin as cyanidin-3-glycoside.

Cooking of some herbs and spices is traditional

Turkey has so rich in plant varieties which has almost 9000 totally. Turkey has 3000 endemic plant varieties whereas Europe has 2500 and Greece has the most quantities like 800 and Spain has 720 endemic varieties. It is clear that Turkey has very rich in endemic plant.[21]Their populations and varieties can be vary according to regions of Turkey. They contain antioxidants; antimicrobials are other biochemical active substances. Cultivated and/or naturally occurring vegetables and herbs are cooked in kinds of types and prepared salads.The researchers[20]reported that important herbs in Turkish flora, including fennel, sage, rosemary, mallow, sweet basil, savory, chicory, nettle, thyme, flax, cumin, caper, coriander, milk thistle, spanish lavender, marjoram, dandelion, rocket, purslane, spanish salsify, amaranthus, wild radish, and wild mustard. They acted on metabolic pathway in the organism for protection.One of them is uritica sp., thus, its seeds are consumed in whole the Anatolia; there are special recipes which have medicinal effects to human. Plant products have strong antioxidant properties sine contain vitamin C and α-carotene, flavonoids like flavone, isoflavone, antosyanin, catechine and iso,catechine rather

than containing vitamin C and E, α-carotene.[22] (Onion cook almost in every Turkishmeal with vegetables. Onion contain allycine, has antimicrobial effect and oligosaccharids which become prebiotic. It has and some flavonoids that can prevent some cardiovascular disease. Traditional Turkish diet or foods are in rich in vegetables, herbs and fruits. Vegetables cook usually as mixtures of them with oil and tomato paste. This cooking type is common in all the Anatolia. Turkish people have three main meals after meals consumed fresh fruits. Kuersetin is the most effective flavonoid can reduce coroner heart diseases, support immune system, have antiflamatuar effect, and preventing thromboses aggregation.[23] Wild edible and cultivated edible fungi are common whole the Anatolia. Mushrooms contain lots of nutrients also they can evaluate as for their medicinal effects. At the same time Turkey has so common wild edible mushrooms species.[24,25]

Nutrition habits of societies should be important for public health

It was reported that there was a correlation nutrition and cancer in epidemiologic studies. Karakaya& Kavas[17]investigated mutagenic and anti-mutagenic affects some foods; Urtica sp. 46.32%, rose ship 44.03%, showed thehighest anti-mutagenic effect. Consumption of same plant extracts as tea and black tea is common in Turkey. They should be similar effects as antioxidant, antimicrobial, anticoagulant, relaxing property. In Turkey, especially, drinking black tea is the in abundant quantities. Black tea contains tea catechineses that are strong antioxidant, antimicrobial or other useful medicinal effects.[26]Flavonoids and phenolic compounds are currently believed to exert cardio protective effects in human via their ability to inhibit oxidation of low density protein.[27]Tea is a widely consumed element of the diet in Turkey. Tea consumption can be defined as part of breakfast and it is drunk all day as hot soft drink. It should be abundant according to lots of country consumption all over the world. It is preferred drinking tea instead of coffee commonly. Processed black tea leaves is left with boiled water on the second greater tea pot at least 6-10 minutes on the heating device and drunk as hot with small glasses almost 100 ml volume. Brewing style should be provided lots of phenolic substances from tea leaves Thus, anti-oxidant properties of Turkish brewing tea should be strong due to brewing type and black tea production process steps such as withering, rolling, fermentation (oxidation)and drying.[28]Health benefits of tea are generally attributed to the antioxidant properties of the major flavonoids components, catechins, theaflavins, bioflalovonolals and flavic acids. Tea flavonoids possess not only reducing risk of coronary heart disease but also preventing effect on some cancers.[29,30]

Turkish coffee and its benefits with importance of Turkish social life

Turkish coffee is a drinking type of coffee. In Turkey, it is preferred medium roasted *Coffee arabica*coffee beans those after grinding as a powder, Turkish coffee is made in the special coffee pot after that added to porcelain little cubs with its foaming style on the surface of cup. Foam is the essential ritual and functional sensory attributes of Turkish coffee. Turkish Coffee was drinking in special houses in 16th an17th centuries during Ottoman Empire who introduced to Turkish Coffee drinking type to Europe on those years. It is well known that the houses where drinking Turkish Coffee as called coffee House" and then comes to today as cafe namely *"café" term was*originated from Turkish culture since Ottoman Empire historically. The people were drinking coffee for social life for dialog of humans. Coffee contains kinds of nutrients including some of special compounds like trigonelineconverted to nicotinic acid during roasted in high temperatures. Coffee reaches the main flovar after roasting that contains at least 900 volatile compounds. Turkish coffee has lots of good medicinal benefits because of rich in biochemical composition.[31–34] Kinds of molasses produced from sorts of fruits mulberry, grape, fig, watermelon, apricot. This group contains glucose, fructose, other sugars and minerals.[35]Karakaya and eldetermined that grape molasses contain high content of quaresetin which was antioxidant; average content was 1692±28µg/l.

Nut consumption should contribute to human nutrition because of rich nutritive values of them

Walnuts are a rich source of n-3 and, n-6 polyunsaturated fatty acids. Effects of walnut intake on hyperlipidemia and systolic blood pressure, triglyceride and cholesterol were determined. In conclusion, the fatty acid composition of the diet appears to be more important than total content.[26]Turkey has mainly three walnut varities; Şebin, Bilecik and Yalova. Şebin variety belongs to Şebinkarahisar City where I was born and original country of Author's places in North East Anotalia in Black Sea ReagonOf Turkey. The have superior quality properties and they are into international walnut varieties.[36]Hazelnut, peanut and pistachio nuts are consumed in large quantities, and they have great importance for these products economically. Nuts are rich in chemical composition and nutrients. Their beneficial effects are especially high polyunsaturated/saturated fat ratio, high percentage of monounsaturated fat, high protein contents and nutritive minerals and high fiber content.[37]Nuts have different kind's consumption properties in some food treatments such as salting, roasting, vacuum packaging or under inert gas, in Turkey. These food treatments are common for all the nut varieties; they are consumed as mixtures of them mostly. It is well known that legumes are the good source of nutrients mainly protein, carbohydrates, fitoterols, vitamins and minerals. Leblebi is produced from chickpea in Turkey. It is nutritive snack. The important reason consumption of leblebi depends on its high protein content with other nutrients and also contains very less fat content according to nuts snacks. Leblebi mainly originated in Turkey, exact details of leblebi. There are two different kinds of leblebi, dehulledleblebi (Sari Leblebi and GiritLeblebi) and nondehulledleblebi (BeyazLeblebi and Sak|zLeblebi) produced in Turkey.[38]

Tomato and red peppers and their products like pastes, or spices are so common in Turkish kitchen

Tomato which contains lycopene, is consumed both fresh and cooked and as tomato paste in lots of cooked Turkish foods like vegetable, legumes and soups etc. inlarge quantities. Lycopene is a carotenoids and has protective effects against some cancers. Its medicinal effects can increase with fat in cooked meals. Lycopene is an anti-oxidant and has preventing factors and it is most effective in various carotenoids.[39]Red peppers are used in foods especially in south and south east Anatolia so common. Peppers contain capsaicionids consisted of 5 different compounds. These compounds have antigenotoxic, antimutagenic, anticarcinogenic and antimicrobial.[40]

Conclusion

Obesity is one of the biggest and important nutrition and health problems of the World. If balanced and sufficient nutrition preferred by the people, It is recommended to take Turkish traditional nutrition including functional properties. Mediterranean diet and Black sea region diet that including vegetable, olive oil and fish are common

Citation: Çağlarirmak N. Obesity and traditional nutrition: introduction of Turkish traditional foods, functional properties and biochemistry. *AdvObes Weight Manag Control.* 2019;9(6):162–166. DOI: 10.15406/aowmc.2019.09.00293

especially in the sea sides of our country.I believe that Turkish traditional nutrition should be superior or preferred against fast foods with law calorie cooking type and reduced salt and sweet type foods and drinks by supporting other positive factors. Above mentioned introduced Turkish traditional food groups will be remedy when they consumed in healthy and safe conditions with other life factors such as exercise, body movement and clean environment.This review is a short description and introduction and explained by following literature in its own topic.

Acknowledgements

None.

Conflicts of interests

Author declares there is no Conflict of interests.

Funding

None.

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Citation: Çağlarirmak N. Obesity and traditional nutrition: introduction of Turkish traditional foods, functional properties and biochemistry. *AdvObes Weight Manag Control.* 2019;9(6):162–166. DOI: 10.15406/aowmc.2019.09.00293