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ORGANSKA HRANA – PRO ET CONTRA[1]

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Apstrakt: Prema svim raspoloživim informacijama, proizvodnja i prodaja organske hrane u velikom je porastu, kako u svetu, tako i kod nas. Procenjuje se da je ovaj porast posledica uverenosti kupaca da je organska hrana ukusnija i/ili zdravija, hranljivija, da sadrži manje količine pesticida, konzervanasa, aditiva, da ne sadrži genetski modifikovane komponente, itd. Međutim, šta od ovoga predstavlja činjenicu, a šta zabludu? U nedostatku studija koji se bave problematikom organske hrane u Srbiji, oslanjamo se na rezultate istraživanja sprovedenih u svetu, prvenstveno u zemljama u kojima proizvodnja i prodaja organske hrane imaju višedecenijsku tradiciju. Najveći broj istraživanja kojim se bavi ovaj pregled odnosi se na prisustvo pesticida u organskoj hrani i ona su nedvosmisleno utvrdila da organska hrana sadrži znatno manje količine pesticida od konvencionalno proizvedene hrane. U drugim aspektima zdravstvene bezbednosti, utvrđeno je da organska hrana ima značajno niže vrednosti ili odsustvo antibiotika, hormona i faktora rasta, genetski modifikovanih činilaca, kao i veštačkih konzervanasa i aditiva. Neka od istraživanja koja su sprovedena sa ciljem potvrde tvrdnje da je organska hrana hranljivija od konvencionalno proizvedene, utvrdila su da neke namirnice imaju više vitamina, minerala i antioksidanata. Međutim, mnogobrojne studije nisu potvrdile ove zaključke, već su pronašle da je sadržaj pomenutih sastojaka bez značajne razlike između organske i konvencionalne hrane. Šta je od svega pomenutog istina, potvrdiće neke buduće, potpuno objektivne studije.

Ključne reči: *organska hrana, kovencionalna hrana, pesticidi, aditivi*

UVOD

Pojam „organska hrana“ se prvi put pojavio 1940. godine, u knjizi „*Look to the Land*“ koju je napisao Walter James i odnosio se na „farmu koja postoji kao organizam“, ekološki izbalansiran, holistički sistem koji stoji nasuprot „hemijskoj farmi“ koja ne može da opstaje bez uticaja čoveka (Paull, 2006). Pojam „organski“ koji se koristi u bio-medicinskim naukama podrazumeva molekule koje sadrže ugljenik i on nema nikakve veze sa organskom hranom. Adekvatan, opštreprihvaćen pojam vezan za hranu koja se dobija u uobičajenim procesima proizvodnje nije „neorganska hrana“ (u bio-medicinskom smislu), već „konvencionalna hrana“.

Organska hrana se proizvodi prema standardima koje određuju relevantna, ovlašćena tela ili organizacije. Najdužu tradiciju u standardizovanju organske proizvodnje i prometa i najrazvijeniji sistem sertifikovanja imaju SAD (National Organic Program), Australija (Australian Organic Standards i NASAA Organic Standard), EU (EU-Eco-regulation), Japan (JAS Standards), Indija (National Program for Organic Production) itd. Prema većini standarda za proizvodnju i promet, organska hrana se proizvodi sa minimalnim korišćenjem veštačkih hemijskih

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supstanci, u određenim uslovima sredine, sa jasno definisanim uslovima čuvanja i transporta. Pored ovoga, u sve većem broju zemalja prihvata se norma da se u proizvodnji organske hrane ne sme koristiti nanotehnologija (Paull & Lyons, 2008). Kao rezultat primene ovih standarda, organska hrana ne sadrži, ili sadrži veoma male količine, pesticida, veštačkih konzervanasa, aditiva, teških metala, antibiotika, hormona, genetski modifikovanih organizama i drugih potencijalno štetnih supstanci.

Prema informacijama sa tržišta, proizvodnja i prodaja organske hrane u velikom je porastu, kako u svetu, tako i kod nas. Organska hrana je u aprilu 2009. godine učestvovala sa 1-2% u ukupnoj prodaji hrane u svetu, dok je u 2021. prodaja dostigla 5,7% (Danner et al., 2022). Ukupna prodaja organske hrane u svetu je u 2002. godini iznosila oko 23 milijarde EUR, da bi u 2016. godini premašila 106 milijardi EUR. Organska proizvodnja se danas praktikuje u 190 država, na ukupno 75 miliona hektara, na kojima radi oko 3,3 milion farmera (Willer et al., 2021).

UK Soil Association, najveća organizacija za organske standarde u Velikoj Britaniji, ukazuje na to da je porast u proizvodnji i prodaji organske hrane posledica sve veće zabrinutosti kupaca oko upotrebe pesticida i drugih veštačkih materija, ali i svesnosti o tome kako i u kakvim uslovima je hrana proizvedena i koliko dugo i u kakvim uslovima je transportovana do kupaca. U vezi sa tim, postoji predrasuda da je organska hrana ukusnija i/ili zdravija, hranljivija, da je proizvedena u ekološki povoljnijim uslovima, da nije dugo putovala od mesta proizvodnje, da ne sadrži veštačke aditive, konzervanse, pesticide, genetski modifikovane komponente, itd...

Šta od svega toga predstavlja činjenicu, a šta zabludu?

Organska hrana i pesticidi

Najpre, u proizvodnji organske hrane se ne koriste isključivo prirodne materije, već je dozvoljeno koristiti i neke veštački dobijene hemijske supstance. Štaviše, ponekad je pogrešno insistirati na prirodnim sredstvima. Na primer, neki proizvođači u procesu prihranjivanja koriste prirodna đubriva koja sadrže E. coli, koja može da izazove probleme sa zdravljem i može da se uništi samo dugim izlaganjem visokoj temperaturi. Postoje pesticidi biljnog porekla, prirodne supstance koje brane biljke od napada štetočina. Međutim, i ti pesticidi (Bacillus thuringiensis, piretrum, rotenon i slične supstance), mogu da budu opasni po zdravlje čoveka, pa su u SAD potpuno zabranjene u proizvodnji organske hrane (Uddin & Bari, 2019).

S druge strane, sintetički pesticidi su supstance koje bez ikakve sumnje izazivaju zdravstvene probleme kod ljudi, bilo kod radnika na farmama na kojima se pesticidi primenjuju, bilo kao supstance čije ostatke unosimo u malim količinama sa hranom i vodom, ili kao supstance koje zaostaju u zemljištu, zagađujući hranu i vodu. Stotinama studija je dokazano da izloženost pesticidima može da izazove mnogobrojne zdravstvene tegobe i probleme, kao što su abdominalni bol, vrtoglavica, migrenozna glavobolja, muka i povraćanje, kao i probleme sa kožom i očima (Ali et al., 2021; Ecobichon, 1991; Rani et al., 2021; Yura et al., 2021). Međutim, pesticidi mogu da izazovu i ozbiljnije zdravstvene probleme kao što su respiratorni problemi (Hughes, 2022; McCauley et al., 2006), rak (Alavanja et al., 2004; De Graaf et al., 2022; Matich et al., 2021; Panis et al., 2022; Sandoval-Insausti et al., 2021; Van Maele-Fabry & Willems, 2003), depresija (Kamel et al., 2003; Wu et al., n.d.), neurološki problemi (Arab & Mostafalou, 2021; Keifer & Firestone, 2007; Richardson et al., 2019), pobačaji i urođeni defekti (Engel et al., 2000; Fucic et al., 2021; Li et al., 2022; Schwartz et al., 1986) itd.

Studija USDA (US Department of Agriculture) koja je obuhvatila ispitivanja svežeg i prerađenog voća i povrća iz organske i konvencionalne proizvodnje na prisustvo oko 400 različitih pesticida 2020. godine, pokazala je da 30% uzoraka nema detektabilne pesticide, dok je samo 0,49% sadržalo pesticide u količini višoj od propisane. Od ukupno 9600 uzoraka, njih 706 je bilo iz organske proizvodnje. U organskom uzorku, oko 30% nije sadržavalo detektabilne pesticide, dok ni jedan uzorak nije sadržao pesticide u količini koja bi prevazilazila dozvoljene vrednosti. Primera radi, od 19 ispitanih vrsta i proizvoda voća i povrća, krompir je sadržao najviše vrednosti pesticida, ali organski krompir praktično ne sadrži pesticide (USDA, 2020). Pored ove, mnoge druge studije potvrđuju da se u oko 25-30% organske hrane uopšte ne nalaze pesticidi, niti njihovi produkti (Crinnion, 2010; Schleiffer, 2022).

Konvencionalno proizvedene jabuke se, za razliku od organski proizvedenih, tretiraju i do 16 puta u toku sezone i to sa oko 35 pesticida (Reganold, 2006). Međutim, mora da se podvuče da konvencionalna hrana, koja sadrži mnogostruko veće količine pesticida i dalje ne sadrži toksične količine, o čemu se vodi računa prilikom redovnih i vanrednih kontrola fizičke, hemijske i zdravstvene ispravnosti.

Aditivi i genetski modifikovani organizmi u organskoj hrani

Organska hrana ne sme da sadrži aditive kao što su zasićene masti, veštački zaslađivači i boje, od kojih se mnogi povezuju sa rizikom za oboljevanje od astme (Woessner et al., 1999), migrenoznim glavoboljama (Kelman, 2007), zaostajanjem u rastu i razvoju i hiperaktivnošću kod dece (Kraemer et al., 2022). Organska hrana ne sadrži, niti se u procesu proizvodnje koriste genetski modifikovani organizmi.

Nutritivna vrednost organske hrane

Jedna od najvećih preglednih studija je objavljena 1998. godine, a bavila se upoređivanjem nutritivnih karakteristika organske i konvencionalne hrane. Uporednim pregledom podataka iz 34 prethodno objavljene studije pronađeno je da organska hrana sadrži veće količine vitamina C, kao i većine minerala (Worthington, 1998). U drugoj poznatoj preglednoj studiji istih autora (Worthington studija), koja je analizirala podatke prikupljene iz čak 41 studije poređene su vrednosti nutrijenata voća, povrća i žita. Ova studija je pokazala značajno veće vrednosti vitamina C (27%), gvožđa (21,1%), magnezijuma (29,3%) i fosfora (13,6%), u poređenju sa konvencionalno proizvedenom hranom. Pored ovoga, ova studija je zaključila da organsko povrće (spanać, šargarepa, krompir, kupus, zelena salata) sadrži značajno veće količine vitamina C u poređenju sa konvencionalnim povrćem. Uz to, sadržaj nitrata je bio za 15,1% niži (Worthington, 2001). Slične rezultate su objavili Xiaofan i saradnici u nedavno objavljenoj velikoj studiji realizovanoj u Kini: u organskom voću i povrću bilo je značajno više vitamina C, antocijana, izoflavonoida, karotenoida, fosfora, gvožđa, magnezijuma, cinka, bakra i hroma, dok je u namirnicama životinjskog porekla pronađeno značajno više polinezasićenih masnih kiselina. U organskim proizvodima je pronađeno znatno manje nitrata i teških metala, a pesticidi uopšte nisu registrovani (Yu et al., 2018). Veoma slični nalazi su i u studiji koju su objavili Brandt i saradnici (Brandt et al., 2011). Pored ovoga, interesantno je pomenuti i da je jedan tim švedskih naučnika pronašao da biljke koje su izložene napadima insekata stvaraju kao odbrambenu meru polifenole koji spadaju među najjače antioksidante. Ukoliko ih od insekata brane pesticidi, nemaju potrebu da stvaraju ove blagotvorne supstance. Netretirana organska hrana tako ima dvostruki kvalitet: i niže vrednosti pesticida i više vrednosti atioksidanata polifenola (Olsson et al., 2006). Organske supe od povrća imaju i do šest puta veće vrednosti salicilata, koji su izuzetno značajni u prevenciji i lečenju kardiovaskularnih oboljenja, arterioskleroze i raka debelog creva (Baxter et al., 2001).

Međutim, ne potvrđuju sve studije veću nutritivnu vrednost organske hrane i njen povoljni uticaj na zdravlje ljudi. Jedan pregled literature zaključuje da „nema jakih dokaza da konzumiranje organske hrane svojim nutritivnim svojstvima doprinosi zdravlju“ (Dangour et al., 2009). Mnoge druge studije takođe nisu pronašle dokaze da organska hrana ima veću hranljivost, ali je bezbednija za upotrebu, jer sadrži manje količine štetnih materija (Ditlevsen et al., 2019; Forman et al., 2012; Williams, 2002). Interesantno je da organska hrana može da sadrži više prirodnih biotoksina, kao što je solanin u krompiru (koji bi trebalo da biljku brani od insekata i drugih štetočina u nedostatku pesticida i insekticida), a koji može da bude potencijalno opasan za ljude (Friedman et al., 2017).

Mišljenja smo da je gotovo nemoguće posmatrati izolovano uticaj nutritivnog sastava organske hrane na čoveka, zato što na zdravlje utiču i drugi faktori, kao što su životne navike (upotreba alkohola, izloženost cigaretnom dimu, količina hrane i njena kalorijska vrednost, količina fizičke aktivnosti itd.), faktori sredine (kvalitet vazduha, vode), genetski uticaji i sl. Zbog toga bi ovo veoma važno pitanje trebalo da se analizira u strogo kontrolisanoj studiji u kojoj bi uticaj navedenih faktora bio sveden na najmanju meru.

Zašto organska hrana košta više?

Organski mlečni proizvodi, žito, zrnevlje, meso i drugi proizvodi koštaju više najpre zato što se ne proizvode u velikim količinama. Radi se o malim proizvodnjama, na malim farmama i parcelama, pa su troškovi proizvodnje veći po jedinici proizvedene hrane. Organski proizvođači se striktno pridržavaju da u proizvodnji hrane ne koriste antibiotike, hormone, pesticide, konzervanse i aditive da bi povećali, sačuvali i održavali proizvode, pa deo proizvoda propadne tokom procesa proizvodnje, čuvanja ili transporta. U slučaju mlečnih proizvoda, jaja i mesa, na cenu utiče i propisani broj životinja po jedinici površine zemljišta. Zbog navedenih razloga, organski proizvodi u SAD koštaju od nekoliko pa do čak 240% više od konvencionalnih (USDA, n.d.).

ZAKLJUČAK

Proizvodnja i prodaja organske hrane je u velikom zamahu. Kao i u svakom drugom velikom biznisu i ovde se iznose mišljenja koja su ili preterano povoljna ili krajnje nepovoljna, u zavisnosti od toga da li ih pišu pristalice ili protivnici. Kontradiktornosti koje saopštavaju velike naučne studije koje se bave potpuno istim predmetom ispitivanja govore tome u prilog. To je i razlog da se u Srbiji što pre sprovedu autentična, objektivna istraživanja koja bi trebalo da nam potvrde da organska hrana ima pozitivne nutritivne i zdravstvene karakteristike. U diverzitetu informacija koje su nam na raspolaganju, skloni smo da verujemo da magija organske hrane ipak postoji.

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Scientific review **CC BY**

ORGANIC FOOD – PRO ET CONTRA[1]

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Abstract: Based on all available information, there has been a great expansion of organic food production and sale, both globally and in Serbia. It is estimated that this expansion results from buyers' belief that organic food is tastier and/or healthier, more nutritious, that it contains less pesticides, preservatives, additives, thaat it does not contain any genetically modified components, etc. However, which of these beliefs are facts, and which are misconceptions? In the absence of studies dealing with the issue of organic food in Serbia, we rely on the results of studies conducted in the world, primarily in countries where the production and sale of organic food has a decades-long tradition. Most studies covered by this review refer to the presence of pesticides in organic food and they all unequivocally established that organic food contains significantly lower amounts of pesticides than conventionally produced food. In terms of other aspects of health safety, it was found that organic food has significantly lower values or absence of antibiotics, growth hormones and factors, genetically modified components as well as artificial preservatives and additives. Some of the research that was conducted to confirm the claim that organic food is more nutritious than conventionally produced food, established that some foods have more vitamins, minerals and antioxidants. However, numerous studies did not confirm these conclusions, but rather found that there is no significant difference between the content of the mentioned ingredients in organic and conventional food. Which of the above is true will be confirmed by some future, fully objective studies.

Keywords: *organic food, conventional food, pesticides, additives*

INTRODUCTION

The term "organic food" first appeared in 1940, in the book "*Look to the Land*" written by Walter James and referred to the "farm that exists as an organism", an ecologically balanced, holistic system that stands in contrast to the "chemical farm" which cannot survive without human influence (Paull, 2006). The term "organic" as used in the biomedical sciences refers to molecules containing carbon and has nothing to do with organic food. An adequate, generally accepted term related to food obtained in the usual production processes is not "inorganic food" (because the food is not inorganic in the bio-medical sense), but "conventional food".

Organic food is produced in accordance with standards prescribed by relevant, authorised bodies or organizations. The USA (the National Organic Program), Australia (the Australian Organic Standards and the NASAA Organic Standard), the EU (the EU-Eco-regulation), Japan (the JAS Standards), India (National Program for Organic

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Production) etc. have the longest tradition in the standardization of organic production and distribution, as well as the most developed system of certification. According to most standards for production and trade, organic food is produced with minimal use of artificial chemical substances, under clearly defined environmental conditions, and strictly specified storage and transport conditions. In addition, more and more countries are accepting the norm that nanotechnology should not be used in the production of organic food (Paull & Lyons, 2008). As a result of applying these standards, organic food does not contain (or contains very small amounts of) pesticides, artificial preservatives, additives, heavy metals, antibiotics, hormones, genetically modified organisms and other potentially harmful substances.

According to information from the market, the production and sale of organic food is on the rise, both globally and in Serbia. In April 2009, organic food accounted for 1-2% of total food sales in the world, while in 2021 its sales reached 5.7% (Danner et al., 2022). The total sales of organic food in the world in 2002 amounted to around EUR 23 billion, and in 2016 it exceeded EUR 106 billion. Today, organic production is practiced in 190 countries, on a total of 75 million hectares cultivated by about 3.3 million farmers (Willer et al., 2022).

The UK Soil Association, the biggest organization for organic standards in Great Britain, underlines that the rise in the production and sale of organic food is a consequence of buyers' increased concern regarding the use of pesticides and other artificial substances, but also the raised awareness of how and in which conditions the food is produced, as well as for how long and in which conditions it was transported to buyers. In this regard, there is a prejudice that organic food is tastier and/or healthier, more nutritious, that it was produced in more environmentally friendly conditions, that it did not travel long from the place of production, that it does not contain artificial additives, preservatives, pesticides, genetically modified components, etc...

What of all this is fact and what is misconception?

Organic food and pesticides

First of all, not only natural substances are used in the production of organic food, but it is also allowed to use some artificially obtained chemical substances. Moreover, sometimes it is wrong to insist on natural agents. For example, some producers use natural fertilizers in the supplementation process that contain E. coli, which can cause health problems and can only be destroyed by prolonged exposure to high temperatures. There are plant-based pesticides, natural substances that protect plants from pest attacks. However, even those pesticides (Bacillus thuringiensis, pyrethrum, rotenone and similar substances) can be dangerous to human health, so in the USA they are completely prohibited in the production of organic food (Uddin & Bari, 2019).

On the other hand, synthetic pesticides are substances that without any doubt cause health problems in humans, either in workers on the farms where the pesticides are applied, or as substances whose residues we ingest in small quantities with food and water, or as substances that remain in the soil , contaminating food and water. Hundreds of studies have shown that exposure to pesticides can cause numerous health ailments and problems, such as abdominal pain, dizziness, migraine headaches, nausea and vomiting, as well as skin and eye problems (Ali et al., 2021; Ecobichon, 1991; Rani et al., 2021; Yura et al., 2021). However, pesticides can also cause more severe health problems, such as respiratory problems (Hughes, 2022; McCauley et al., 2006), cancer (Alavanja et al., 2004; De Graaf et al., 2022; Matich et al., 2021; Panis et al., 2022; Sandoval-Insausti et al., 2021; Van Maele-Fabry & Willems, 2003), depression (Kamel et al., 2003; Wu et al., n.d.), neurological problems (Arab & Mostafalou, 2021; Keifer & Firestone, 2007; Richardson et al., 2019), miscarriage and congenital anomalies (Engel et al., 2000; Fucic et al., 2021; Li et al., 2022; Schwartz et al., 1986) etc.

A US Department of Agriculture 2020 study which conducted testing of fresh and processed fruits and vegetables from organic and conventional production for the presence of about 400 different pesticides, showed that 30% of the samples had no detectable pesticides, while only 0.49% contained pesticides in an amount higher than prescribed. Out of a total of 9600 samples, 706 of them were from organic production. In the organic sample, around 30% of food did not contain detectable pesticides, and none of the samples contained pesticides in an amount higher than prescribed. For example, out of 19 examined kinds and products of fruits and vegetables, potato contained the highest values of pesticides, but organic potato contained virtually no pesticides (USDA, 2020). In addition to this one, many other studies confirm that there are no pesticides or their products in 25-30% of organic food (Crinnion, 2010; Schleiffer & Speiser, 2022).

Conventionally produced apples, unlike organically produced ones, are treated up to 16 times during the season with about 35 pesticides (Reganold, 2006). However, it must be underlined that conventional food, which

contains many times greater amounts of pesticides, still does not contain toxic amounts, which is taken into account during regular and extraordinary physical, chemical and health controls.

Additives and genetically modified organisms in organic food

Organic food must not contain additives such as saturated fats, artificial sweeteners and colouring, many of which are connected to the risk from developing asthma (Woessner et al., 1999), migraine headaches (Kelman, 2007), growth and development disorder and children hyperactivity (Kraemer et al., 2022). Organic food does not contain genetically modified organisms, nor are they used in the production process.

Nutritional value of organic food

One of the largest review studies was published in 1998, comparing the nutritional characteristics of organic and conventional foods. A comparative review of data from 34 previously published studies found that organic foods contain higher amounts of vitamin C, as well as most minerals (Worthington, 1998). In another well-known review study by the same authors (Worthington study), which analyzed data collected from as many as 41 studies, nutrient values of fruits, vegetables and grains were compared. This study showed significantly higher values of vitamin C (27%), iron (21.1%), magnesium (29.3%) and phosphorus (13.6%), compared to conventionally produced food. In addition, this study concluded that organic vegetables (spinach, carrots, potatoes, cabbage, lettuce) contain significantly higher amounts of vitamin C, compared to conventional vegetables. In addition, nitrate content was 15.1% lower (Worthington, 2001). Similar results were reported by Xiaofan et al. in a recently published large study conducted in China: organic fruits and vegetables had significantly more vitamin C, anthocyanins, isoflavonoids, carotenoids, phosphorus, iron, magnesium, zinc, copper and chromium, while foods of animal origin contained significantly more polyunsaturated fatty acids. Organic products had significantly lower amounts of nitrates and heavy metals, and no pesticides were registered (Yu et al., 2018). Very similar findings come from a study published by Brandt et al. (Brandt et al., 2011). In addition to this, it is interesting to mention that a team of Swedish scientists found that plants exposed to insect attacks produce polyphenols, which are among the strongest antioxidants, as a defensive measure. If they are protected from insects by pesticides, they have no need to create these beneficial substances. Untreated organic food thus has a double quality: lower levels of pesticides and higher levels of polyphenol antioxidants (Olsson et al., 2006). Organic vegetable soups have up to six times higher salicylate values, which are extremely important in the prevention and treatment of cardiovascular diseases, arteriosclerosis and colon cancer (Baxter et al., 2001).

However, not all studies confirm higher nutritional value of organic food and its beneficial effect on human health. One review of the literature concluded that "there is no strong evidence that consumption of organic foods contributes to health through its nutritional properties" (Dangour et al., 2009). Also, many other studies found no evidence that organic food is more nutritious, but they did establish that such food is safer to eat because it contains lower amounts of harmful substances (Ditlevsen et al., 2019; Forman et al., 2012; Williams, 2002). Interestingly, organic food can contain more natural biotoxins, such as solanine in potatoes (which is supposed to protect the plant from insects and other pests in the absence of pesticides and insecticides), which can be potentially dangerous to humans (Friedman et al., 2017).

We believe that it is almost impossible to observe in isolation the impact of the nutritional composition of organic food on a person, because health is affected by other factors, such as lifestyle (alcohol use, exposure to cigarette smoke, amount of food and its caloric value, amount of physical activity, etc.), environmental factors (air, water quality), genetic factors, etc. Therefore, this very important question should be analyzed in a strictly controlled study in which the influence of the mentioned factors would be minimized.

Why does organic food cost more?

Organic dairy products, wheat, grains, meat and other products cost more primarily because they are not produced in large quantities. These are small productions, on small farms and plots, so production costs are higher per unit of food produced. Organic producers strictly adhere to regulations that require that in food production they do not use antibiotics, hormones, pesticides, preservatives and additives to increase, preserve and maintain products, so part of the product perishes during the production, storage or transportation process. In the case of dairy products, eggs and meat, the price is also affected by the prescribed number of animals per unit of land area. For

these reasons, organic products in the US cost anywhere from a few to as much as 240% more than conventional products (USDA, n.d.).

CONCLUSION

The production and sale of organic food is on the rise. There is every chance that, as in any other big business, opinions are expressed regarding this matter that are either excessively favourable or extremely unfavourable, depending on whether they are written by supporters or opponents. Contradictions reported by large scientific studies dealing with exactly the same subject of investigation speak in favor of this. This is also the reason to conduct authentic, objective research as soon as possible in Serbia, which should confirm to us that organic food has positive nutritional and health characteristics. In the diversity of information available to us, we tend to believe that the magic of organic food exists, after all.

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