

ORGANIC FOOD CONSUMPTION AND ITS IMPACT ON HUMAN HEALTH

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Abstract

The production and consumption of organic food have increased steadily worldwide, despite the lower productivity of organic crops. Indeed, the population attributes healthier properties to organic food. Although scientific evidence is still scarce, organic agriculture seems to contribute to maintaining an optimal health status and decreases the risk of developing chronic diseases. Organic products are earning lot of impetus in this world now-a-days. Organic products are mainly organic food, or products of cultivation that avoid the artificial and harmful agriculture enhancers like fertilizers or pesticides, insecticides etc. Organic farming has been a traditional way of farming in India. Sustainable agriculture and organic farming go hand in hand. They both aim towards a healthy atmosphere for crops to yield. At the same time, it helps to keep health of soil in check. Sustainable agriculture can also be considered as a part of organic farming. The most recent systematic literature reviews and meta-analyses have indicated significant and nutrition-relevant composition differences between organic and nonorganic foods. This included higher antioxidant, but lower cadmium and pesticide levels in organic crops, and higher omega-3 fatty acids concentrations in organic meat and dairy products. Also, results from a small number of human cohort studies indicate that there are positive associations between organic food consumption and reduced risk/incidence of certain acute diseases (e.g. pre-eclampsia, hypospadias) and obesity. Concerns about potential negative health impacts of organic food consumption (e.g. risks linked to lower iodine levels in organic milk) have also been raised, but are not currently supported by evidence from human cohort studies. However, there is virtually no published data from long-term cohort studies focusing on chronic diseases (e.g. cardiovascular disease, diabetes, cancer, and neurodegenerative conditions) and controlled human dietary intervention studies comparing effects

of organic and conventional diets. It is therefore currently not possible to quantify to what extent organic food consumption may affect human health.

Key Words: Organic and nonorganic foods, Human Cohort, Chronic Diseases, Food Consumption, Human Health, Conventional Diets, Neurodegenerative Conditions

Introduction

The demand for organic food has increased rapidly over the last 25 years in many developed countries in Europe, North America, and Asia/Oceania. Demand is mainly driven by consumer perceptions that organic farming is more sustainable, and delivers environmental sustainability, biodiversity, animal welfare, and food quality and safety benefits compared to intensive conventional farming. An environment that is entirely natural is required for the growth of organic matter. Any meal that wants to be categorized as organic must not have any internal cell structures that have undergone genetic modification. The plant should have the same requirements as those found in the wild, but it should also be safe for humans to eat and have unaltered inner cell structure.

Organic farmers and food producers grow and produce food without using synthetic chemicals such as pesticides and artificial fertilizers. Organic foods are not necessarily completely chemical free they may be grown on land not previously used for organic food production and, therefore, might contain chemical residues. However, the pesticide residues in organic food are considerably lower than those found in conventional farming – where foods are produced with synthetic chemicals. Most people buy organically-grown food products because they are concerned about pesticides, additives, antibiotics or other chemical residues and believe organic food is healthier.

Organically grown fresh fruit takes the leading place in international trade too. While the production and sale of organic food comes mainly from developed countries, even developing countries have begun to produce and export organic foods and products. India is a leader in the export of organic tea, basmati rice and cotton. Another area where India can see a demand in the export market is through organic vegetables. Not only is the production of organic food better for human health and the environment than conventional production, emerging science reveals what organic advocates have been saying for a long time-in addition to lacking the toxic residues of conventional foods, organic food is more nutritious. Organic farming is beneficial to society, but organic food consumption is also beneficial to the people at large as it is highly nutritious and doesn't cause any harm to the human body.

Review of literature

According to Vieira et al., (2013) the study of Organic food products require certainty throughout the entire process of the supply chain, from farming to customers. Managing the supply chain for organic food products is needed by practitioners to ensure that all food processes in the supply chain meet the requirements of organic food.

According to Hamzaoui-Essoussi & Zahaf, (2012) the complexity of organic food in the supply chain is high because it must involve many parties, various aspects, and a long process. Related parties and processes start from fruit and vegetable farming, distributors, retailers, buyers,

or end customers. If supply chain management for organic food goes well, organic supply chains can help increase end customer trust in organic products

According to Bo Chen and Sayed Saghaian (2017), study examines the consumer preference for organic food can affect choice of retailing format in California. Thus the study findings are based on regular organic user (households) and are more likely to support organic specialty store and discount store. Whereas they shop less in warehouse clubs and convenience store. This has strong managerial implication for retailers.

According to Atulkar and Kesari (2016) found that a study of consumer shopping experience was relevant to identify feeling and measure customer perceptions towards purchase of products in retail environment thus, it is necessary that retailers create something a positive shopping experience for consumers using tangible and intangible benefits to induce purchase and consumption of organic food products.

According to Kuhar and Juvancic(2008) found that purchases of organic food was most important greatly influenced by their availability in retail market for goods, followed by consumers income ,health and environmental careful thought, and of vision attractiveness of products. based on this study ,they developed an ordered probity model of consumer choice to quantify various determinants of purchases frequency for organically produced fruit and vegetables could be further encourage something by targeted knowledge and awareness raising actions.

Objectives

1. To analyse the benefits of Organic Food consumption.
2. To understand the significance of organic farming of agriculture produce.
3. To explore the various products of organic foods.

Methodology

The title of the study is based on secondary source of data. different news papers, research reports, source from horticulture department, journals, websites and research papers.

Analyses of composition differences

A series of recent systematic reviews and meta-analyses of published data have shown that there are significant differences in the concentrations of nutritionally relevant compounds between organically and conventionally produced foods. Specifically, these systematic reviews reported that:

- organic crops have higher antioxidant activity and between 18 and 69% higher concentrations of a range of individual antioxidants; increased intakes of polyphenolics and antioxidants has been linked to a reduced risk of certain chronic diseases such as cardiovascular and neurodegenerative diseases and certain cancers (discussed by Barański et al.
- conventional crops have higher levels of the toxic metal cadmium, and are four-times more likely to contain detectable pesticide residues; there are general recommendations to minimise the intake of pesticides and cadmium to avoid potential negative health impacts (discussed by Barański et al.

- conventional crops also have higher concentrations of protein, nitrogen, nitrate, nitrite, respectively; increased intakes of these compounds have been linked to both positive and negative health impacts (discussed by Barański et al.
- organic meat, milk, and dairy products have approximately higher concentrations of nutritionally-desirable omega-3 fatty acids; intakes of very long chain omega-3 fatty acids in Western diets and there are EFSA (European Food Safety Authority) recommendation to at least double their intake (discussed by Średnicka-Tober et al.
- organic milk was reported to contain higher levels of total conjugated linoleic acid (CLA), higher iron and α -tocopherol concentrations, which are all considered to be nutritionally desirable, although the evidence for health benefits of CLA is mainly from in vitro and animal studies (discussed by Średnicka-Tober et al.
- conventional milk was estimated to have and higher concentrations of iodine and selenium, respectively; milk is not a major source for selenium, but may be the main source of iodine in countries where iodised salt is not widely available or used; there is concern that the lower iodine content in organic milk may cause iodine deficiency (especially during pregnancy and/or in individuals with low milk consumption) and associated negative health impacts (e.g. impaired foetal brain development) (discussed by Średnicka-Tober et al.
- conventional meat has slightly, but significantly higher concentrations of the saturated fatty acids myristic- and palmitic acid, which were linked to an increased risk of cardiovascular disease (discussed by Średnicka-Tober).

Grade (grading of recommendations, assessments, development, and evaluation) assessment showed that the overall strength of evidence was good or moderate for many of the parameters listed above (e.g. total antioxidant activity, phenolic acids, flavonoids, flavanones, flavanols, anthocyanins stilbenes and nitrite in crops; total PUFA in milk and meat; n-3 PUFA, CLA, I, Fe, Se in milk), but low for others (e.g. certain individual or groups of antioxidants, cadmium, and nitrate in crops; α -tocopherol and carotenoids in milk, n-3 PUFA in meat).

Also, for a range of parameters (especially in meat) for which significant differences were identified by meta-analyses GRADE assessment showed high inconsistency, poor precision and/or publication bias. This indicates that for a range of parameters the currently available evidence base is still too small for accurate meta-analyses and/or that confounding factors (e.g. differences in agronomic and/or pedoclimatic conditions between countries in which studies were carried out) resulted in high variability (further limitations of the currently available evidence base for composition differences are described below).

Meta-analyses carried out prior to 2014 were all based on a smaller evidence base (number of publications/data), but produced broadly similar results, when they analysed the same parameters. Reported higher levels of antioxidants in organic crops. Smith-Spangler et al. Reported higher concentrations of phenolic compounds (the main group of antioxidants found in crop plants), risk of pesticide residues in organic crops, higher concentrations of omega-3 fatty acids in milk, and that the majority of published studies found higher cadmium concentrations in conventional crops. Palupi et al. only reviewed studies on milk composition published between March 2008 and April 2011, and reported significantly higher concentrations of omega-3 fatty acids, CLA, and tocopherol

in organic milk. Dangour et al. (who pooled data for milk, meat, and eggs) found a trend towards higher concentrations of omega-3 polyunsaturated fatty acids (PUFA) in organic animal product, but did not include these results in the published paper. Based on these results it is tempting to conclude that (except for iodine intake with milk) organic food consumption results in higher dietary intakes of a range of nutritionally desirable compounds such as antioxidants, certain vitamins, and omega-3 fatty acids, but lower intakes of nutritionally undesirable pesticides, Cd, and saturated fatty acids.

However, it is virtually impossible to accurately estimate change in dietary intakes, since there are still substantial gaps of knowledge with respect to composition differences between organically and conventionally produced foods. For example, there is a need to systematically review mycotoxin levels in crops (especially cereals) and/or composition differences in eggs from organic and conventional farms, insufficient data to accurately estimate the magnitude of differences for individual crops and meat products from different livestock species, which means it is currently not possible to accurately estimate differences in dietary intakes of the most desirable and undesirable compounds from organic and conventional food based diets, not enough published information to compare concentrations of a wide range of nutritionally relevant nutrients (e.g. water soluble vitamins, and many minerals in milk and meat) and undesirable compounds (e.g. pesticides, antibiotics, hormones, synthetic food additives in milk and meat) in a meta-analysis. Also, a range of methodological issues related to systematic reviews of composition data have been raised and need to be resolved.

Human cohort studies

A small number of human cohort studies and animal dietary intervention studies have identified associations between organic food consumption and specific health, and health-related physiological parameters. Most human cohort studies were mother-and-child dyad cohorts and reported positive associations between organic vegetable and/or dairy consumption and risks of (1) pre-eclampsia in mothers, (2) hypospadias in baby boys and/or (3) eczema in infants.

A sub-study (of about 54 000 adults) of the French-Belgium Nutrient-Sainté cohort reported that regular consumers of organic food had a substantially lower risk of being overweight or obese. The association between organic food consumption and reduced risk overweight/obesity was also found when data were adjusted for age, physical activity, education, smoking status, energy intake, restrictive diet, and adherence to public nutritional guidelines. In the paper the authors state that these data must be interpreted with caution since the study has several limitations.

Also, a subgroup of a large UK cohort study focused on cancer incidence in middle-aged women showed that there is a weak association between organic food consumption and a reduced incidence of non-Hodgkin's lymphoma, although the study was based on an observation period of only seven years.

However, there are a range of confounding factors that may have influenced the outcome of all cohort studies since organic and conventional consumers are known to differ in a range of other lifestyle factors (e.g. diet composition, use of medicines, health supplements and vaccinations, and/or levels of exercise, alcohol consumption, and smoking) which are often difficult to properly factor out in cohort studies.

Animal dietary intervention studies

There are also a small number of published animal dietary intervention studies in which the effects of organic vs. conventional food consumption were compared (reviewed by Velimirov et al. Średnicka-Tober). All studies identified significant effects on animal growth and/or physiological parameters (e.g. body composition, plasma antioxidant and hormone levels, immunoglobulin concentrations and/or immune system responsiveness) of switching from conventional to organically produced feed. However, the parameters assessed and analytical methods, animal species and/or experimental designs used differed between studies, which make it difficult to identify consistent trends across studies (reviewed by Velimirov and Średnicka-Tober).

Knowledge gaps and future research needs

It is increasingly accepted that there can be nutritionally relevant composition differences between organic and conventional foods and there is some evidence for potential benefits of organic food consumption from human cohort studies. However, considerable uncertainty/controversy remains on whether or to what extent these composition differences affect human health.

To overcome this uncertainty it is essential to address a range of methodological issues in both the available meta-analyses of composition data and dietary cohort studies. carry out additional well-designed food composition comparisons for specific crops and meat types to allow reliable comparisons of dietary intakes of nutritionally relevant compounds with organic and conventional foods. carry out well-designed human dietary intervention studies comparing the effect of organic vs. conventional food consumption on health and health-related physiological parameters. Also, studies that allow a more mechanistic understanding of how organic food consumption does affect health are required. This could, for example, be based on dietary intervention studies with animal models prone to specific diseases.

Another thing to think about is that living in a clean environment is linked to better health outcomes for humans, according to recent scientific research. In the process of processing organic food, the use of ionizing radiation and food additives is restricted to preserve the authenticity of the product. Cleaner food translates into cleaner diets, which promote long-term health. Artificial coloring, flavoring, or preservatives are not included in organic food. Organic food consumption is a healthy practice, as it promotes a clean environment and better health outcomes. Indian consumers are becoming more aware of the quality, nutritional value, and impact of food, leading to a shift towards organic food. Despite its higher cost, this awareness is benefiting the organic industry, as customers are willing to pay more for products that improve their health. The pandemic of 2021 has led to a paradigm shift in India, with people purchasing organic food as a preventative health measure.

Summary and Conclusion

Consuming healthy organic foods and avoiding the ill effects of conventional foods and food additives and factors. Organic food consumption is a basic healthy fact from common consumer perspective. Another consideration is new scientifically confirmed benefits is also that human health is associated with healthier living style in uncontaminated environment. In organic food processing there is also restriction of the use of food additives and ionizing radiation maintaining a true nature of the product. Cleaner food means cleaner diets which leads to a healthy

life. Organic food contains no artificial colours, flavours or preservatives. In recent years, Indian consumers have started paying more thoughtfulness to their health, the nutrient content and quality of the food they eat. Due to these concerns, they have gradually begun shifting towards organic food, even though organic foods are priced higher than conventional foods.

This change in perception is likely to drive the growth of the organic food market in future as well. In fact, all over the globe, there has been a growth in the organic food and beverage market particularly fruit and vegetables. In fact, the biggest share in the organic food market comes from fruit and vegetables, followed by bread, cereals, milk and meat. Organically grown fresh fruit takes the leading place in international trade too. Organic farming is beneficial to society, but organic food consumption is also beneficial to the people at large as it is highly nutritious and doesn't cause any harm to the human body. Still, on the other hand, it is costly. Keeping the organic food products free of pests' turns out to be a headache to the farmers. So whether organic food is a boon or bane is for the consumer or potential consumer to decide. However, recently, retailers across the country have noticed the growing popularity of organic foods and have been adding organic foods to their shelves.

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