



July – September 2018

Special Issue: International Conference on Probiotics and Food Sustainability 2018
September 23-24, 2018, UTM Johor Bahru, Malaysia

Theme: Food Sustainability

Editorial

Probiotics and Food Sustainability

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Received: July 7, 2018/ Accepted: July 16, 2018/ Published online: August 3, 2018

Academic Editors: William Riley and Malik A. Hussain



To cite this article:

Hashim, Z. and Muhammad, I.I. (2018). Probiotics and food sustainability. *Asia-Pacific Journal of Food Safety and Security*, 4(3), 1-4.

Highlights

- Food sustainability is vital to meet increased food demand of growing world population.
- Probiotics development for sustainable food product/ supplement and improving food productivity.

About Authors

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Food is a basic necessity of life, for without food, there is no life. On average, a man requires about 2500 calories per day to maintain, while a woman needs 2000 calories. These calories come from the food that we eat every day. The United Nation Department of Economic and Social Affairs reported that the current world population of 7.3 billion is expected to reach 8.5 billion by 2030, 9.7 billion in 2050 and 11.2 billion in 2100 (UN DESA, 2015). Meanwhile, the production of staple crops is showing a decreasing trend worldwide, as reported by the United States Department of Agriculture. For example, the estimated global ending stocks for 2018/2019 are 9 million bushels lowered for wheat, 1.9 million tons lowered for rice and 105 million bushels lowered for corn (USDA World Agricultural Supply and Demand Estimates, 2018). With the decreasing food supply and ever-increasing population, on top of climate change and environmental problems, the world is facing a great challenge to feed its growing inhabitants. Food insecurity does not only affect human health, but also leads to poor economic performance and social development. For instance, food insecurity was revealed as one of the main drivers of unrest and conflict in the Middle East and North Africa (IFPRI, 2015).

To increase food supply, food production needs to be increased. Ethical and sustainable agriculture practices, urban farming and other new approaches have been proposed to meet the growing food demand. At the same time, available food resources should be used wisely and optimally. Dr. Gunhild A Stordalen, Founder and Director of EAT Foundation, proposed four ways to improve food productivity; improving nutrition and minimizing the environmental footprint of the food system, tackling the growing burden of obesity and non-communicable diseases, such as diabetes and heart disease, investments to facilitate innovations and improve nutrition in a cost-effective and sustainable way, and engaging the private sector in finding solutions to a more sustainable and nutritious food system (Stordalen, 2015). Indeed, food sustainability has become the key strategy to cope with a decreasing food supply.

The term “food sustainability” can be interpreted in several ways. For some, it means a food system that is secure and reliable, or easily available for consumption. For others, it relates to foods that are highly nutritious and good for our body. The City of Calgary, Canada defines food sustainability as “a collaborative network that integrates several components in order to enhance a community’s environmental, economic and social well-being”. The components of a sustainable food system encompass the production, processing, distribution, access and preparation, consumption and food waste recovery (The City of Calgary, Canada). The Sustain Alliance, UK, states that although there is no ‘legal’ definition of food sustainability, food should be produced, processed, distributed and disposed of in ways that it can contribute to thriving local economies and sustainable livelihoods, protect the diversity of both plants and animals and the welfare of farmed and wild species, avoid damaging or wasting natural resources or contributing to climate change, and provide social benefits, such as good quality food, safe and healthy products, and educational opportunities (Sustain UK).

The Role of Probiotics in Food Sustainability

Probiotics are live microorganisms including bacteria and yeasts that are beneficial to our digestive system. In contrast to harmful germs that cause infection or diseases, probiotics are the “good” bacteria that protect our body. Among the benefits of probiotics are improved digestion, better nutrient absorption, reduced allergies and lactose intolerance, and overall maintenance of good health (Roy et al., 2010).

Probiotics have emerged as a low-cost and sustainable food supplement not only for humans but also animals and plants. In many parts of the world, probiotics are readily consumed by its people in the form of probiotic dairy products such as cheese and yogurt, as well as fermented food such as pickles, soy sauce and bean paste. In animals such as cows, probiotics have been associated with fewer infections, better meat quality and increased milk yield. In plants, probiotics improve water and soil quality, thus leading to healthier growth.

Recent developments in probiotic research include improvement of probiotic properties, screening of new probiotic microorganisms, improvement of probiotic delivery systems and advanced technologies in probiotic processing. With more efficient and broader range of probiotics, it is no doubt that probiotics will find a greater role in advancing food sustainability. In addition to several new food products such as kelp-based products, algae oil, meat substitutes, lab-grown meat, and even bugs or insects as an alternative protein source (Dickie, 2017), good bacteria might just be the answer we are looking for to insure a better future.

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