



CULTURED MICROALGAE FOR THE FOOD INDUSTRY

CURRENT AND POTENTIAL APPLICATIONS

Edited by
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Chapter 15

Future perspectives of microalgae in the food industry

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15.1 Introduction

Food is primarily intended to respond to hunger and provide nutrients needed for human survival. The global population is expected to reach 9.8 billion by 2050 (UN DESA, 2017). Consequently, current food production will need to double within the next 30 years to fulfill the nutritional needs of this growing population (Searchinger, Waite, Hanson, & Ranganathan, 2019). Also, the Food and Agriculture Organization (FAO) recently estimated that over 821 million people worldwide are undernourished, having a deficient protein intake (FAO, 2019). Poorer countries are often faced with physical and economic constraints that hinder their access to nutritious foods, further endangering their risk of food insecurity and malnutrition (Swinburn et al., 2019).

Furthermore, the conventional sources of animal-derived protein not only will be insufficient but result in increased greenhouse gas (GHG) emissions and overutilization of water and land, making an extreme pressure on Earth's resources (Wu et al., 2014). Food production accounts for 20%–30% of the total environmental impact (Tukker & Jansen, 2006), being responsible for near 30% of global GHG emissions (Vermeulen, Campbell, & Ingram, 2012).

In the European Union, animal-based proteins are consumed in higher quantities than plant-based ones (European Environment Agency, 2017). However, concerns on the impacts of agricultural production, processing, and distribution of food on the environment, ecosystem, and sustainability, as well as health and animal welfare have boosted the demand for new natural and healthier food sources (Caporgno & Mathys, 2018). On the other side of the spectrum, in most developed countries, modernization and economic development have led to an alarming overweight crisis. Almost 30% of the world's population is overweight, with this being more critical within the