

Supplementary Material

Microalgae as Sustainable Biofactories to Produce High-Value Lipids: Biodiversity, Exploitation, and Biotechnological Applications

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Table S1. Insight on the legislation available in European Union to regulate food market.

	Regulations and Directives	Brief description	Ref.
Food supplements	Directive 2002/46 EC	Sets-out rules on food supplements to protect consumers Ensure that products are not provided with misleading information	[1]
New (novel) foods	Regulation (EU) 2015/2283	Rules for the placing of novel foods on the market in the EU	[2]
Feed additives	Regulation (EC) No 1831/2003	Standardized procedure for authorizing feed additives Rules for labelling, placing on the market and use	[3]
Foods for specific groups	Regulation (EU) No 609/2013	Sets-out compositional and labelling requirements for infant formulae Follow-on formulae intended for use by Community infants in good health	[4]
Nutrition and health claims on food	Regulation (EC) No 1924/2006	Ensure a high level of consumer protection Give the consumer the necessary information to make choices Create equal conditions of competition for the food industry	[5]
Medicinal products	Regulation (EC) No 726/2004	Guarantee high standards of quality and safety of medicines in the EU	[6]

Table S2. Biological activities studied for microalgae-derived phytosterols in cell culture experiments, and animal models.

Microalga	Extract description	Activity	Assay	Model	Ref.
<i>Phormidium autumnale</i>	Phytosterol-rich fraction	Neuroprotective	<i>In vitro</i> <i>In silico</i>		[7]
<i>Nannochloropsis oculata</i>	Sterol rich fraction	Anti-inflammatory Anti-cancer	<i>In vitro</i>	RAW 264.7 macrophage cells HL-60, A-549, HEP-3B, HCT-116, and SW-480 cancer cells	[8]
<i>Navicula incerta</i>	Isolated stigmasterol	Anti-proliferative	<i>In vitro</i>	HepG2 cells	[9]
<i>Dunaliella tertiolecta</i>	Phytosterols	Immunomodulatory	<i>In vitro</i>	Sheep peripheral blood mononuclear cells	[10]
	Mix of ergosterol, and 7-dehydroporiferasterol	Anti-inflammatory			
	Mix of acetylated ergosterol and 7-dehydroporiferasterolergosterol				
	Phytosterols	Neuromodulatory	<i>In vivo</i>	Rats	[11]
<i>Chlorella vulgaris</i>	Isolated sterols	Anti-inflammatory	<i>In vivo</i>	ICR mice	[12]

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