The aim of the present work is to study the effect of incorporation of biomass and phycocyanin extracts of Spirulina platensis growing in define media at large scales (300 liters, limited in nitrogen and high salinity) to traditional butter biscuits in order to increase general mental health as functional products, FPs). The FP were manufactured at a pilot scale formulated by adding algal biomass (0.3, 0.6 and 0.9%) and S. platensis phycocyanin (at 0.3%) to wheat flour and stored for one month at room temperature, protected from light and air. The approximate and nutrition composition of S. platensis biomass showed high quantity (% dry weight, dw.) of phycocyanin (13.51%, natural food colorant), tocopherols (0.43%), carotenoids (2.65%), vitamins C (1.25%), -6, -3 fatty acids, essential elements (Fe, Zn, Cr, Se, and others) and antioxidant compounds includes: total phenolic (1.73%), flavonoids (0.87%) and glutathione (0.245 mM). FPs showed a high oxidative stability during storage (30 days) periods (as assessed by antiradical scavenging activity of DPPH and TBA test), compared with that in untreated food products (control). Data of sensory evaluation revealed that FPs containing S. platensis biomass or algae extracts were significantly acceptable as control for main sensory characteristics (colour, odour/ aroma, flavor, texture, the global appreciation and overall acceptability). S. platensis FPs presented an accentuated green tonality, which increase with the quantity of added biomass. Thus, it could be concluded that functional biscuits had good sensory and nutritional profiles and can be developed as new niche food market.

**Keywords**

Microalgae, Spirulina platensis, Functional foods, Phycocyanin, Antioxidant, Natural food colorant.