Nutritional and bioactive properties of three edible species of green algae, genus Caulerpa (Caulerpaceae)

Abstract

The green algae genus Caulerpa is coenocytic, and the thallus consists of only one cell with many nuclei. It is widely distributed in the tropical seas. In the Southeast Asian waters, there are at least ten known species. Three species, particularly Caulerpa racemosa var. clavifera f. macrophysa (Kützing) Weber-van Bosse, C. racemosa var. laetevirens (Montagne) Weber-van Bosse, and Caulerpa lentillifera J. Agardh are widely consumed. The proximate analysis and secondary metabolite composition of these three species were determined to describe their lipid and nutritional values. Glycolipids and phospholipids were the major lipid classes, with significant levels of triacylglycerol. Polyunsaturated fatty acids (PUFA) were the major fatty acids of all the three species. Typical n-3 and n-6 PUFA such as 18:3n-3, 18:4n-3, 20:5n-3, 18;2n-6, and 20:4n-6 were found in significant amount in all these three species. All three species contained a red-pigmented secondary metabolite determined as caulerpin. All three extracts exhibited potent antimicrobial activity against human food pathogenic bacteria and anti-inflammatory activity against the murine macrophage cell line, RAW 264.7.