Extraction and Evaluation of Cancer-Preventive Properties of Green Algae from Florida

Lee, Jessica

The objective of this study was to extract compounds from green algae, and evaluate them to see if they possess anti-oxidant activity for the prevention of cancer cell formation. Two unexplored algae from Florida were used: Chaetomorpha gracilis and Codium intertextum. Compounds from Chaetomorpha gracilis were extracted using Ethyl Acetate, Ethanol, and water. 50:50 Ethyl Acetate/Methanol and 50:50 Methanol/Water were used to extract compounds from Codium intertextum. Liquid-liquid partitioning and Silica/C18 columns were used furthermore for isolation of nonpolar and polar extracts. The Antioxidant response reporter assay was used to test the anti-oxidative properties in all the samples; the luciferase gene was transfected into cultured IMR-32 cells (neuroblastoma cancer cells). EnVision was the luminescence detector used. The positive control, Sulforaphane, is a potent antioxidant and shows that full activation is around 22.2-fold. In all the samples dissolved in Ethanol for the assay, sample JL-1-50-2 (100ug/mL) had the greatest activation fold (1.962), and sample JL-1-31-2 (100ug/mL) had the greatest activation fold (1.947) for samples dissolved in DMSO. Based on the results, it can be concluded that there is anti-oxidant activity in these algae samples, but due to their crude form, some compounds may be inhibiting the anti-oxidant properties of the desired compounds. Further research includes bio-assay guided fractionation and purification of desired compounds.

Awards Won: