Diet-derived halogenated metabolite from the sea hare Aplysia parvula

Abstract

As part of our continuous interest in the diversity of halogenated metabolites in the red algae genus Laurencia and their grazers, the sea hare genus Aplysia in Sabah coastal waters, we report the chemical composition of Aplysia parvula collected from Sepanggar Island, Kota Kinabalu. Chemical analysis resulted in the isolation and identification of three sesquiterpenes; palisadin A (1), iso-obtusol (2) and elatol (3). Compounds were present as 13.9%, 6.7%, and 8.5% of crude extract, respectively. A similar analysis of its diet from the same location, Laurencia snackeyi (Weber-van Bosse) Masuda and Laurencia majuscula (Harvey) Lucas, showed the existence of palisadin A, palisadin B, aplysistatin and 5-acetoxypalisadin B in Laurencia snackeyi, while Laurencia majuscula contained elatol and isoobtusol. Hence, it is suggestive that A. parvula is capable of selective sequestering of compounds derived from its diet. Based on the chemicals sequestered, it is confirmed that A. parvula is an oligophagous feeder. Its ability to selectively sequester palisadin A and not the other syndreans, reflects on the complexity of its digestive glands. All three compounds also showed potent antimicrobial, antifeedant and cytotoxic activities.