

Structural diversity and geographical distribution of halogenated secondary metabolites in red algae, *Laurencia nangii* Masuda (Rhodomelaceae, Ceramiales), in the coastal waters of North Borneo Island

Abstract

The red algae genus *Laurencia* (Rhodomelaceae, Ceramiales) is known as a prolific producer of halogenated secondary metabolites with a high level of species diversity and geographical distribution. In North Borneo Island, Malaysia, there are four main *Laurencia* species: *Laurencia snackeyi*, *Laurencia majuscula*, *Laurencia similis* and *L. nangii*. Although the chemistry of *Laurencia* is well studied, the diversity of compounds in *L. nangii* has not been thoroughly investigated. Therefore, we studied the chemical constituents of seven populations of *L. nangii* from Tunku Abdul Rahman Marine Park (two populations), Dinawan Island (one population), Tun Mustapha Marine Park (two populations) and Tun Sakaran Marine Park (two populations). Halogenated compounds were isolated and the structures determined via spectroscopic methods. A total of 20 metabolites belonging to the classes of sesquiterpenes, acetylenes, bromoallenes, diterpenes and triterpenes were identified. Populations from Tunku Abdul Rahman Marine Park and Dinawan Island contained non-chamigrane-type sesquiterpenes, acetylenes and diterpenes. Populations from Tun Mustapha Marine Park contained chamigrane-type sesquiterpenes, acetylenes and diterpenes. However, the chemical compositions of populations from Tun Sakaran Marine Park were found to differ significantly, containing chamigrane-type and non-chamigrane-type sesquiterpenes, bromoallenes and triterpenes. This investigation has revealed the presence of interesting chemotaxonomical markers in populations of *L. nangii* and the existence of chemical races in this species.