

3rd International Conference on

Oceanography

June 22-24, 2015 Philadelphia, USA

Effects of several seaweed extract on rhizoid formation of the red algae *Porphyra suborbiculata*

Mehader Getachew Desta and Yong-Ki Hong
Pukyong National University, South Korea

Marine algae and invertebrates are major fouling organisms causing considerable structural and economic damage to man-made structures such as ship hulls and aquaculture nets. Most antifouling techniques have relied on organotin or heavy metals based paints that act as broad spectrum toxins to target and non-target marine organisms. So, naturally occurring antifouling compounds are the most promising alternatives to prevent the attachment of fouling organisms. Therefore, in this study we have investigated the anti-attachment and enhancing activities of 18 seaweed extracts against the known fouling species of red algae, *Porphyra suborbiculata*. At both tested concentrations of 20 and 200 µg/mL culture medium. *Hizikia fusiformis* extract showed the highest inhibitory effect on the rhizoid production, rhizoid growth and germinated and juvenile blade growth. Also, extracts from *Ulva pertusa*, *Enteromorpha linza*, *Undaria pinnatifida*, *Sargassum horneri*, *Ecklonia cava* showed significant growth inhibition activities ($P < 0.01$). In contrast, the *Codium fragile* extract enhanced the rhizoid production with same concentrations. Also *H. fusiformis* methanol extract inhibited the growth of the spores from both *U. pertusa* and *U. pinnatifida* and reduced the attachment of the diatoms *Naviculata annexa* and *Nitzschia pungens* ($P < 0.05$). Among the five fractions isolated from the *H. fusiformis* extract, ethyl acetate, chloroform-methanol and chloroform fractions have shown significant inhibitory activities against the growth of the *P. suborbiculata* spore. In open silica-gel-column fractionation of this extract, among the five elutes collected the highest inhibition of the *P. suborbiculata* spore was found in the acetonitrile fraction. The isolation of the purified inhibitory compound was done by RP-HPLC at 220 nm after choosing ethanol and acetonitrile as mobile phases based on RP-TLC result.

Biography

Mehader Getachew Desta is MSc student in Pukyong National University, Fisheries College (Department of Biotechnology), Busan, Republic of Korea. She has been working on isolation of bioactive anti-fouling compounds from different seaweed species. Currently, she is purifying anti-fouling compounds from the brown seaweed *H. fusiformis*.

mahget2002@gmail.com

Notes: