

Isolation of Compounds from the Marine Microalgae *Thraustochytrium pachydermum*

Nguyen Thi Thu THUY^{1,2 *}, Nguyen Xuan NHIEM^{1,3}, Nguyen Tien DAT⁴,
Nguyen Trong DAN², Vu Thi LOAN², Quach Thi QUYNH², Dao Nguyen MANH²,
Pham Thi Phuong LIEN² & Do Thi Thuy TRANG²

¹ Graduate University of Science and Technology,
Vietnam Academy of Science and Technology, Hanoi 10000, Vietnam

² Joint Vietnam-Russia Tropical Science and Technology Research Center,
Hanoi 10000, Vietnam

³ Institute of Chemistry, Vietnam Academy of Science and Technology,
Hanoi 10000, Vietnam

⁴ Center for High Technology Research and Development,
Vietnam Academy of Science and Technology, Hanoi 10000, Vietnam

SUMMARY. This study reports the isolation and structural characterization of four secondary metabolites from the marine microalga *Thraustochytrium pachydermum* TSL10 collected from the Truong Sa Archipelago. The biomass was cultivated under optimized aeration and nutrient conditions, extracted with methanol, and fractionated through multiple chromatographic techniques. Four compounds were successfully purified from the dichloromethane-soluble fraction: one diacylglycerol-type glycolipid (2-oleoyl-3-linoleyl-1-O-(α -D-galactosyl-1-6- β -D-galactosyl)-sn-glycerol), two digalactosyl-monoacylglycerols (Gingerglycolipid B and Gingerglycolipid C), and one steroidal glycoside (daucosterol). Structural elucidation was achieved through comprehensive analyses of HR-ESI-MS and 1D/2D-NMR data. These results expand the chemical profile known for *Thraustochytrium* species and highlight the presence of biologically relevant glycolipids and sterol derivatives in *T. pachydermum*.

RESUMEN. Este estudio describe el aislamiento y la caracterización estructural de cuatro metabolitos secundarios de la microalga marina *Thraustochytrium pachydermum* TSL10, recolectada en el archipiélago de Truong Sa. La biomasa se cultivó en condiciones optimizadas de aireación y nutrientes, se extrajo con metanol y se fraccionó mediante diversas técnicas cromatográficas. Se purificaron con éxito cuatro compuestos de la fracción soluble en diclorometano: un glicolípido de tipo diacilglicerol (2-oleoil-3-linoleil-1-O-(α -D-galactosil-1-6- β -D-galactosil)-sn-glicerol), dos digalactosil-monoacilgliceroles (gingerglicolípido B y gingerglicolípido C) y un glucósido esteroideo (daucosterol). La elucidación estructural se logró mediante análisis exhaustivos de datos de HR-ESI-MS y RMN 1D/2D. Estos resultados amplían el perfil químico conocido para las especies de *Thraustochytrium* y resaltan la presencia de glicolípidos y derivados de esteroides biológicamente relevantes en *T. pachydermum*.

KEYWORDS: *Thraustochytrium pachydermum*, marine microalgae, glycolipids, daucosterol

* Author to whom correspondence should be addressed. Email: thuyntvietnga@gmail.com