

## Effects of toxic dinoflagellate *Alexandrium minutum* on the expression of detoxification-related genes in the marine copepod *Tigriopus japonicus*

Jeonghoon Han\*, Joon Sang Park\*, Jihoon Lee\*, Yeun Park\*, Hyun Ho Shin\*\*,  
Kyun-Woo Lee\*

\*Department of Marine Biotechnology Research Center, Korea Institute of Ocean Science & Technology

\*\* Library of Marine Samples, Korea Institute of Ocean Science & Technology  
e-mail:jeonghoon@ki

## 독성 와편모조류 *Alexandrium minutum*이 해수산 요각류 *Tigriopus japonicus*에서 해독 관련 유전자의 발현에 미치는 영향

한정훈\*, 박준상\*, 이지훈\*, 박예은\*, 신현호\*\*, 이균우\*

\*한국해양과학기술원 해양생명공학센터

\*\*한국해양과학기술원 해양시료도서관

### 요약

To understand the effects of the toxic dinoflagellate *Alexandrium minutum* on the marine copepod *Tigriopus japonicus*, we assessed acute toxicity and swimming behavior (swimming speed, swimming distance, and swimming path trajectory) in response to *A. minutum* exposure. No significant changes in survival and swimming behavior were observed in response to *A. minutum*. Therefore, to validate the effects of *A. minutum* on the molecular defense response of *T. japonicus*, we measured mRNA expression levels of detoxification-related genes (phase I cytochrome P450s [CYPs], and phase II glutathione-S transferases [GSTs]) in response to *A. minutum*. The mRNA expression levels of these detoxification-related genes (CYPs and GSTs) were significantly up-regulated and down-regulated ( $P < 0.05$ ) in response to *A. minutum*. In particular, *CYP302A2* and *GST-Theta3* showed significant up-regulation. Overall, these results suggest that *CYP* and *GST* genes are likely to play crucial roles in detoxification mechanisms in *T. japonicus*, resulting in no significant changes in the survival and swimming behavior of this marine copepod in response to *A. minutum* exposure.