

Tools to study the metabolism and elimination of brevetoxin metabolites

Tod Leighfield^{1,2} and John Ramsdell^{1,2}

¹*Medical University of South Carolina, Marine Biomedicine Program, Charleston, SC*

²*NOAA National Ocean Service, CCEHBR, Marine Biotoxins Program, Charleston, SC*

Brevetoxins are potent polyketide neurotoxins produced during harmful algal blooms by the dinoflagellate *Karenia brevis*. Food web accumulation of these toxins are responsible for marine mammal mortality events, economic losses in fisheries and tourism, and risks to human health resulting from the consumption of contaminated shellfish and the inhalation of toxic aerosols. Metabolic transformation of brevetoxin after exposure results in the production of brevetoxin intermediates of varying potencies and concentrations. Studies of metabolic transformation have been hampered by the lack of suitable detection methods for the study of brevetoxin metabolites. Here we describe suitable extraction and detection methods for the analysis of these important metabolites, and the production of radiolabeled analogues of these metabolites. These tools are necessary to conduct *in vivo* exposure studies and measure brevetoxin metabolite distribution and elimination. This research will provide a better understanding into the adverse effects of exposure to brevetoxin and its metabolites in marine animals and humans.

This work is supported by NOAA/NOS.