ABSTRACT

The crisis of antibacterial resistance is an inevitable consequence of the widespread use of antibacterial agents in human health-related settings and agriculture. One of the oldest strategies to combat this crisis is to screen for novel antibacterial drug classes or structures, leading to the discovery of numerous antibacterial compounds, many of which are isolated from actinomyces/ Streptomyces bacteria. Marine samples, in particular, have become a focal point for screening novel antibacterial compounds. Nudibranchs, an ordo of sea slugs, have been understudied for their potential to host microbes capable of producing novel antibacterials compared to other marine isolates such as sediments and sea sponges. Therefore, it is the aim of this thesis to screen for antimicrobial producing microbes from *nudibranch* using a gram-positive and actinomyces selective medium, as well as isolating and measuring the antibacterial activity of the microbe metabolite/supernatant extract. To fulfill this aim, *nudibranch* (species: *Phyllidia varicosa*) isolates were screened for associated bacteria using an actinomyces selective medium. All culturable bacteria were tested for their metabolite's antibacterial properties against available test pathogens by agar plug assay followed by metabolite extraction to isolate the antimicrobial compound. About 36 bacteria isolates were isolated throughout the project and 2 of them exhibited antibacterial activity against tested gram-positive bacteria. Subsequent metabolite extraction by ethyl acetate on one of the bacteria successfully isolated the antimicrobial compound, as demonstrated in well diffusion and disc diffusion assays. There is a strong indication of antimicrobial-producing bacteria to be actinomyces and the produced antimicrobial compound being actinomycin. However, more sophisticated methods such as 16S rRNA sequencing and high-performance liquid chromatography should be done to confirm these claims.

Keywords: antibacterial screening, marine isolate, nudibranch associate microbe, metabolite extraction