

Prospective medical applications of extracts from *Cassiopea* spp. and its associated symbionts

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In recent times, a number of bacteria have developed resistance to the last array of antibiotics available. However, marine invertebrates have been associated with the production of antimicrobial compounds. The present study aims at investigating the antibiotic producing ability of *Cassiopea* spp. and the bacterial communities associated with it. PCR amplification of the COI gene and 16s rRNA gene from the jellyfish and symbiont respectively was performed to identify the specimens. The organic compounds were extracted from both the jellyfish and symbionts using the solvents MeOH and EtOAc. For the MeOH extracts from the bacteria, the average of the total antimicrobial activity was 0.796 for the MeOH extracts and 8.597 for the EtOAc extracts from the symbiont (p-value <0.05). The MeOH extracts from *Cassiopea* spp. had a significant difference with a total mean of 10.563 as compared to the EtOAc extracts with a mean of 9.479 (p-value <0.05). A GC-MS analysis was carried out. The results showed a plethora of clinically relevant molecules. The antibiotic property could be attributed n-Decanoic acid found in the *Cassiopea* spp extract which also has anti-fungal properties. Bioactive compounds having anti-tumour activity (Tetradecanoic acid), anxiolytic activity (lorazepam-2TM and meprobamate), anaesthetic (tropococaine), anti-convulsant and anti-seizure activity (valproic acid and Ethosuximide) were identified. Other compounds with important medical properties such as sedation, immunomodulation, anti-inflammatory and analgesic are also present in the extract. Compounds having pesticide and herbicide activities were also identified. To conclude, the extracts from the jellyfish and its symbionts had a considerable antimicrobial effect with a bactericidal effect against the multidrug resistant bacteria *Acinetobacter* and MRSA with the *Cassiopea* spp. extract. The extracts could be a lead to finding the solution against multidrug resistant organisms.