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Presence of Phthalate Derivative in a Marine Soft Coral, *Carijoa Riisei*

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Abstract

Carijoa riisei (1860) is a soft coral of the family clavulariidae native to tropical West Atlantic. The species is known to use chemical means as their primary defense mechanism. Their secondary metabolite composition found to be slightly different according to the geographical region in the world. Moreover, *C. riisei* has listed as one of the most invasive species in the global invasive databases. It has been recently recorded and a rapid colonisation was observed in the Colombo port environment. A screening of secondary metabolites was carried out to find the chemical composition that might have helped in their successful colonisation within the port environment. *C. riisei* was taken from the experimental structures submerged in Colombo port and chilled samples were transported to the laboratory for analysis. Samples were washed with filtered seawater to remove debris and impurities prior to the extractions. Extractions were made using hexane, dichloromethane, and methanol, respectively. Extracted solvents were then evaporated using a rotary evaporator to obtain dry products. Dry extracts were lyophilised and dissolved in dichloromethane prior to GC-MS analysis. Mono (2-ethylhexyl) phthalate (MEHP) was observed in hexane and dichloromethane extracts and absent from methanol extract of *C. riisei*. MEHP is the active metabolite of common plasticizer, di-(2-ethylhexyl) phthalate (DEHP). MEHP in high concentrations affects negatively on organisms in the synthesis of steroid hormones such as progesterone and estradiol. Moreover, incidents were reported where, DEHP associating with the reproductive dysfunctions in humans as well as in aquatic organisms. There is a possibility that the presence of MEHP in *C. riisei* might have disrupted other epibionts thus, rapid colonization and spread of soft coral in the port environment. There would be a significant impact to the environment if the soft coral uses phthalate derivatives as antifouling agents to prevent epibiosis of other organisms and recruitment to the habitat. Further studies are needed to determine the utilization of phthalate derivatives in *C. riisei*.

Keywords: *Carijoa riisei*, Phthalate, MEHP, GC-MS