

**CONTAMINATION STATUS AND EFFECT OF TRIBUTYLTIN (TBT) ON
REPRODUCTIVE IMPAIRMENT OF MOLLUSCS**

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Xenobiotic tributyltin (TBT) is an organotin compound widely used in various consumer and industrial products such as pesticides, antifouling paints for ship hulls, aquaculture facilities, and other structures exposed to marine waters. However, it adversely affects and interrupts steroid metabolism by converting testosterone to estradiol 17 β in biota. TBT exposure on female molluscs causes reproductive impairment known as imposex which is used as a biomarker of TBT pollution in an aquatic environment. The present study aimed to quantify TBT in water, sediment and marine molluscs collected from the coastal belt of Sri Lanka. The Solid-Phase Micro Extraction method was used to quantify the TBT in five species of molluscs: *Crassostrea madrasensis*, *Crassostrea cucullate*, *Perna viridis*, *Perna perna* and *Thais clavigera*, which are used as seafood. Mollusc samples were collected within the premises of ten fishery and four commercial harbours in Sri Lanka. The TBT concentration in water ranged from 303 ± 7 ng L⁻¹ to 25 ± 4 ng L⁻¹ and in sediment from 107 ± 4 ng Kg⁻¹ to 17 ± 1 ng Kg⁻¹. The highest TBT concentration was recorded in *P. viridis* (234 ± 3 ng Kg⁻¹) collected from Dikkowita fishery harbour, where the highest number of boats operated in the Southern coast. TBT concentration of *T. clavigera* ranged from 32 ± 2 ng Kg⁻¹ to 134 ± 2 ng Kg⁻¹; this species was selected as the bioindicator based on the availability of the organisms to study imposex development. Relative Penis Length Index (RPLI) of affected females varied from 15.5% to 24.8%. *T. clavigera* with the highest RPLI (24.8%) and highest imposex affected frequency (17.0%) was recorded in the Dikkowita harbour. Imposex affected females of *T. clavigera* increased with increasing TBT concentrations in the marine environment ($p < 0.05$). TBT may be a significant factor that impacts the reproductive impairment of molluscs. Therefore, TBT may be a plausible factor that causes the decline of marine molluscs via producing sterile females.

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