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MOLECULAR CYTOGENETIC ANALYSIS OF BIVALVE TUMORS

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Abstract Disseminated neoplasia in bivalves has become a paradigm in oncogenic research because they are, together with Tasmanian devil facial tumour disease (DFTD) and canine transmissible venereal tumour (CTVT) the only known naturally occurring clonally transmissible cancers. Previous studies have described major structural alterations on the karyotypes of these cancers, but they are restricted to the description of the chromosome size and morphology obtained from Giemsa-stained metaphase plates. Although the aforementioned studies allowed detecting both alterations in the ploidy level and presence of abnormal chromosomes, detailed chromosomal mapping has yet to be performed. In this work we report molecular cytogenetic results of disseminated neoplasias in *Polititapes aureus* and *Cerastoderma edule*. Following colchicine treatment, gills were dissected and received a hypotonic treatment prior to fixation in ethanol /acetic acid. Chromosome preparations were fluorescent *in situ* hybridized to detect telomeres and histone gene and ribosomal DNA clusters in both healthy and affected specimens. Our results indicate certain differences between the tumours of these species. Although the telomeres in the neoplastic cells are exclusively located at the ends of the chromosomal arms for both species, these signals are magnified with respect to normal cells in *C. edule*, while in *Polititapes aureus* they show much lower intensity. In both species, the location and number of signals of the analysed markers in the neoplastic metaphases is altered with respect to the usual karyotypes for these species. These results indicate that both duplication events and major structural reorganizations are operating in tumours from both species, therefore demonstrating that this technique could be employed in the characterization of bivalve cancerous karyotypes.

Key words: Disseminated neoplasia, Bivalves, Cytogenetics

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