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EARLY DIAGNOSIS OF MAMMARY TUMOUR AND EFFECT OF TREATMENT USING SYNTHETIC CATIONIC PEPTIDE

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The molecular biology of mammary tumor between canine and human females are well conserved. BRCA2 (breast cancer gene two) genes in both the species encode tumour suppressors protein which can recognise DNA damage and repair. Mutation of this gene can be detected efficiently by PCR-RFLP to early breast cancer diagnosis and adopt suitable method of treatment. In the present experiment PCR-RFLP of BRCA2 gene was used for diagnosis of canine mammary tumor and host defense peptide used as blueprint for the design and synthesis of novel anticancer drugs to avoid the side effect of conventional chemotherapy and chemo resistance. BRCA2 (exon 7) gene was amplified to 535 bp and at nucleotide position 392, there is a change of a → c in the cancer sample lead the creation of a new restriction site for SsiI restriction enzyme. This SNP may be a marker for detection of canine mammary tumour. Support vector machine (SVM) algorithm was used to design and predict the anticancer peptide from the mature functional peptide. MTT assay of MCF-7 cell line after 48 hours of post treatment showed an increase in number of rounded cells when compared with untreated control cells. The ability of the synthesized peptide to induce apoptosis in MCF-7 cells, was further investigated by staining the cells with the fluorescent dye, Hoechst stain solution, which allows the evaluation of the nuclear morphology. Numerous cells with dense, pyknotic nuclei (the brighter fluorescence) were observed in treated, but not in control MCF-7 cells when viewed using an inverted phase-contrast microscope. From the study it can be concluded that PCR-RFLP is one of the attractive approaches for early diagnosis and synthetic cationic peptide can be used for treatment of canine mammary tumour.

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