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Role of Minichromosome Maintenance Protein 7 in the Early Detection of Cervical Cancer

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The Minichromosome maintenance family in general is associated with tumour formation, progression, and malignancy. It has also been reported as a valuable proliferation marker in oral, prostate, colorectal, and lung cancer types. Few studies have investigated MCM7 expression in human cervix tissues. The MCM-2-7 complex consists of six subunits that have a very crucial role in the initiation and elongation of DNA replication, and it is only functional in replicating cells. In cervical intraepithelial neoplasia (CIN), the cellular proliferative compartments expand in proportion to histological grade, which results in MCM 7 positive cells on the epithelial surface. An estimation of MCM expression, either by immunofluorescence or by transcript measurement, would give us an idea of the oncogenic status of the cervical cells. As a result, the abnormal expression of MCM7 protein can be used as a biomarker in the early detection of cervical cancer.

Outcome:

The outcome of the project would be to establish MCM7 as a diagnostic marker for cervical cancer. In brief, the idea would be to do less invasive surgery on the patients by collecting the Pap smear, performing manual LBC coupled with ICC and interpreting the results in the shortest amount of time. A threshold would be set to interpret the results. The up regulation of MCM7 gene expression in cervical cell lines has been confirmed as an aberrant marker in DNA replication. Strong expression of MCM7 is very specific and sensitive, which can be further used as a diagnostic marker for the early detection of cervical cancer.

Biography

I have completed my Bachelor's degree in Biotechnology, Chemistry, and Zoology (St. Aloysius College-Autonomous, Mangalore) and my Masters in Biochemistry and Molecular Biology from the Central University of Kerala, India. My master's thesis work was on "Triclosan Upregulates TGF β 3 in MCF-7 cell line" at the Central University of Kerala, India, where I dreamed of doing research in cancer biology. I have joined Yenepoya Research Centre as a Ph.D. scholar and currently working on the project titled "Development towards early detection of cervical cancer" under the guidance of Dr. Shankar Prasad Das.

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