



Faculty of Science
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STUDY ON SOME SIRTUINS IN HUMAN BREAST CANCER

**A Thesis Submitted for
the Requirement for the Degree of
Doctor of Philosophy
(Zoology)**

By

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Abstract

Mammalian Sirtuins have been shown to perform distinct cellular functions and deregulated expression of these genes was reported to be involved in the development of various malignancies including breast cancer. An increasing number of evidence indicates that Sirtuins have both tumor promoter and tumor suppressor functions. However, the roles of Sirtuins have not been well-studied in breast cancer. In the present study, quantitative expression levels of Sirtuins (SIRT1-3) together with a set of cancer related genes (cMYC, P53, SOD and HIF-1 α genes) were assessed in malignant breast cancer and non-malignant control samples by using a high-throughput real-time PCR method. As a result, Sirtuins were found to be differentially expressed in breast cancer tissues and control samples, respectively. Particularly, expressions of SIRT1 ($p = 0.035$) and SIRT3 ($p = 0.033$) were found to be significantly upregulated, whereas SIRT2 ($p = 0.032$) gene was shown to be downregulated in breast cancer tissues compared to control samples in our study. Additionally, the expression levels of SIRT1-3 genes were correlated to both the selected cancer related genes and to pathological parameters of breast cancer patients. In conclusion, SIRT1 and SIRT3 genes may act as oncogenes,

whereas SIRT2 gene may operate as a tumor suppressor gene in human breast cancer.

Keywords

Breast cancer, SIRT1, SIRT2 and SIRT3

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