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Expression analysis of the translocator protein 18 kDa (Tspo) mRNA in various human normal and cancer tissues

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The translocator protein (TSPO), previously known as the peripheral benzodiazepine receptor, is a distinct receptor from the central benzodiazepine receptor. It is involved in numerous biological functions, including the regulation of cellular proliferation, apoptosis and mitochondrial functions. Previous studies have shown that the expression of TSPO protein correlated positively with tumor malignancy and negatively with patient survival. The aim of this study was to determine the expression of TSPO mRNA in various cancers. Colorimetric and fluorescent in situ hybridization was performed to localize the TSPO mRNA in various cancer tissues. Quantitative RT-PCR was performed on RNA extracted from various cell lines representing normal lung cell (MRC-5), lung cancer cells, (A549), cervical cancer cells (HeLa) and liver cancer cells (Hep G2), to compare the transcript levels of TSPO in these. There was a change in the distribution of the TSPO mRNA transcription pattern between the cancerous and normal tissues as indicated by in situ hybridization. Staining intensity was used as an indication of the level of TSPO mRNA. There was a significant increase in the level of transcription in liver, prostate, kidney and brain cancers while a significant decrease was observed in lung cancers. The RT-PCR results indicate that the highest transcription levels of TSPO were observed in the normal lung cells and the mRNA levels decreased in lung cancer cells. The widespread presence of the TSPO mRNA and TSPO protein in epithelial cells seen in the different organs suggests that the TSPO protein also plays an important role in non-steroidogenic tissues. Our results suggested that modulation of the regulation of TSPO mRNA transcription in different cancer tissues plays an important role in various cancers and may allow for it to be exploited as a prognostic marker in the different cancers.

Biography

Zodwa Dlamini is a Professor of Functional Genomics and Molecular Medicine. Her research interests include the omics technologies including the use of bioinformatics to provide unprecedented possibilities to identify the underlying molecular basis of common diseases including cancer and diseases of lifestyle. She obtained her BSc Hons at the University of the Western Cape, MSc from the University of Natal and PhD at the University of Natal. She joined the University of Western Cape as a postdoctoral fellow. She was then appointed as a Lecturer at University of Witwatersrand and was promoted to a Senior Lecturer. She then joined the University of Limpopo as an Associate Professor in Biochemistry and interviewed successfully at University of South Africa in the role of Deputy Executive Dean and Professor in Molecular Genetics. In June 2015, she was appointed by Mangosuthu University of Technology as the Deputy Vice Chancellor of Research, Innovation and Engagements.

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