Sox 6, Sox 13 and Sox 9 expression pattern in meningioma in East Coast Malaysia.

Balqis Md Dzali1, Wan Rohani Wan Taib2*, Mohd Khairi Zahri1, Mohd Nizam Zahary1, Nor Hidayah Abu Bakar1, Ahmad Zubaidi Abd Latif3, Abd Manaf Ali4, Hasnan Jaafar5 and Farizan Ahmad6.

1Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Kuala Terengganu.
2Institute for Community [Health] Development, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300 Kuala Nerus, Terengganu, Malaysia.
3Faculty of Medicine, Universiti Sultan Zainal Abidin, Medical Campus, 20400 Kuala Terengganu, Terengganu, Malaysia.
4Faculty of Bioresources and Food Industry, Universiti Sultan Zainal Abidin, Besut Campus, 22200, Besut, Terengganu, Malaysia.
5Department of Pathology, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia.
6Department of Neuroscience, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia.

wanrohani@unisza.edu.my

Abstract

Sox (Sry-related high-mobility group box) family plays significant functions in human development from embryonic development, organogenesis and the most recent findings, tissue regeneration. As cell key modulators, deregulation of these genes has been associated with several human diseases including cancer. Sox D and Sox E, two of the nine SOX subgroups and their molecular mechanisms in carcinogenesis are widely studied. Eventhough there are a considerable number of studies done on SOX gene in glioma, such studies in meningioma, which is the most frequent brain tumor type in East Coast Malaysia are still lacking. Thus, this study is opted to determine the expression levels of Sox 6 (SOX D), Sox 13 (SOX D) and Sox 9 (SOXE) in both low and high-grade meningioma in Malaysia population. Formalin-Fixed Paraffin-Embedded (FFPE) samples of low-grade meningioma, high-grade meningioma and a normal brain FFPE tissue were sectioned by using microtome. RNA extraction was then performed according to manufacturer’s instruction. cDNA conversion was then completed by using reverse transcription technique. Finally, Sox6, Sox13 and Sox9 expression pattern in meningioma were achieved by q-PCR assay and normalised to nonneoplastic brain tissues. Each target gene was normalized with beta Actin as internal control or housekeeping gene. The data was analysed statistically with One way ANOVA by using Graphpad Prism 6. The results displayed that Sox6, Sox13 and Sox9 gene were downregulated in all low-grade meningioma in comparison of normal tissue. In addition, there were upregulation observed in both Sox6 and Sox9 expression but downregulated in high-grade meningioma for Sox13. Sox6, Sox13 and Sox9 expression levels in selected brain tumours in Malaysia population provide new insights of SoxD and SoxE expression in this population. The well-known varsity functions of Sox genes and the canonical interaction of Sox genes with their co-factors may elucidate the fluctuations of Sox gene expression level across diseases and genetic backgrounds. Thus, functional studies are recommended to be carried out to observe the selected genes’ functions and mechanisms whether they should reflect their diverse roles in specific Malaysia population. though at the molecular level, they have the same G6PD Chatham mutation.

Keywords: Sox6; Sox13; Sox9; brain tumours; qPCR; meningioma

*Author for Correspondence