

**UNIVERSITI TEKNOLOGI MARA**

**COMPARISON OF  $\alpha_4\beta_1$  INTEGRIN  
EXPRESSION BETWEEN  
OSTEOSARCOMA CELL LINE AND  
PRIMARY OSTEOSARCOMA CELL  
ISOLATED FROM PATIENTS WITH  
OSTEOSARCOMA**

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**MSc**

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## AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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## ABSTRACT

Osteosarcoma is a rare and aggressive primary malignant bone tumour that arises in metaphyses of long bones of children and young adults. The 5-year survival rate of osteosarcoma has improved over the years with the advancement of technology however metastasis remains the major problem in the prognosis of this disease. Therefore, this study was carried out to understand more on the fundamental biological processes of osteosarcoma metastasis by characterizing the features of primary osteosarcoma cells and osteosarcoma cell line followed by elucidating the expressions level of  $\alpha_4$  and  $\beta_1$  integrins protein in both cultures. Four types of cultured cells were used; hFOB 1.19 cell line, MG-63 cell line, human osteoblast, and primary osteosarcoma cells isolated from osteosarcoma patients (n=5). Based on the characterization result, MG-63 cells and primary cells were distinctively different through their morphology features. This is due to the cell line has been altered genetically to live immortally in *in vitro* condition. However, the expression level of  $\alpha_4$  integrin showed to be significantly different in only OS5. In contradictory, the expression of  $\beta_1$  integrin of OS1 and OS5 were significantly low when compared to MG-63 cells. Conversely, the cytoskeletal arrangements were dynamically structured as MG-63 cell expressed on tubulin showing that the segregation of chromosome were highly active. Meanwhile the primary osteosarcoma cells showed significantly difference in OS1, OS4 and OS5 expressing actin proteins that involved in cell locomotion and subsequent exhibit cell migration even though it is not significant. Therefore, further elucidation on  $\alpha_4$  and  $\beta_1$  integrins and cytoskeletal arrangement are required for future exploration therapeutic mediators to cure osteosarcoma patients.

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