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Profiling of osteosarcoma serum leads to identification of proteins involved in modulation of $\alpha 4 \beta 1$ integrin expression in osteosarcoma cells migration

Fadzliza Hafiza Ramli¹, Zulaika Roslan¹, Azura Mansor², Mudiana Muhamad¹, Nor Faissal Yasin² and Sharaniza Ab-Rahim³¹ Universiti Teknologi MARA, Malaysia² University of Malaya, Malaysia

Osteosarcoma (OS) is a malignant bone tumor that predominantly arises in children and adolescent. Metastasis of OS often leads to fatality and reducing the survival rate of OS patients. The mechanism involved in metastasis often related to cell-to-cell interaction and cell migration, which often involved integrin receptor proteins, cell adhesion molecules and the cytoskeleton structure. Therefore, the aim of this study is to profile the serum proteins isolated from OS patients and identify the cell adhesion molecules that involved in integrin signaling pathway. The work was further carried out to elucidate the expression of $\alpha 4 \beta 1$ integrin, tubulin and actin proteins as well as cell migration properties in primary OS cell cultured. Profiling of the OS serum proteins was carried out using iTRAQ analysis. Verification of the protein expression was done using western blot and immunofluorescence analysis. Fibronectin, thrombospondin-1 and vitronectin, involved in integrin signaling pathway was identified from the profile. The expression of integrin protein from the OS primary culture also reveals significant alteration and rearrangement on the cytoskeleton structure in the OS cells. The result showed a significant increase in $\beta 1$ integrin expression while no significance found between primary OS cells to the control. Immunostaining assessment showed actin expression significantly higher compared to the tubulin expression across all primary OS cells group. This study has confirmed the involvement of integrin in cytoskeletal arrangement for the OS migration. This could be related to the expression of the adhesion molecules (thrombospondin-1, fibronectin and vitronectin) that has been identified in the OS serum protein.

Biography

Fadzliza Hafiza Ramli has completed her Bachelor (Hons) of Biomolecular Science from Universiti Teknologi MARA Malaysia. She then completed her Master's degree in the field of Medical Sciences (Biochemistry & Molecular Medicine).

fadlizahafizaramli@gmail.com

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