

## ABSTRACT

Ribosomal proteins (RPs) were only believed to involve in ribosome biogenesis and protein synthesis but there are increasing evidences to show the potential extraribosomal functions of ribosomal proteins. Ribosomal proteins are involved in regulation of cellular cell growth and differentiation as many studies have linked cancers to the differential expression of RPs. The ribosomal protein, eL27 has shown significant differential expression in cell lines derived from nasopharyngeal carcinoma (NPC) as compared to normal nasopharyngeal epithelium at both transcript and protein level. However, the protein-interacting partners of RPeL27 in NPC remains largely unknown. Hence, in this study we identified and characterized the proteins affected by RPeL27-knockdown in NPC via siRNA knockdown, 2-Dimensional Gel Electrophoresis (2D GE), liquid chromatography mass spectrometry (LCMS) and bioinformatics analysis. We successfully identified 15 differentially expressed proteins in RPeL27-knockdown HK1 cells and all the 15 proteins are cancer-related, often dysregulated in various diseases and take part in significant biological processes responsible for proper cell growth and proliferation. Therefore, the overexpression of RPeL27 could be responsible for NPC development and progression through association with 15 proteins identified either directly or indirectly. We predicted the possible protein interactions between RPeL27 and the 15 proteins identified via *in silico* approach. Our findings reinforce the potential role of ribosomal protein L27 in the carcinogenesis of NPC and provided the possible protein interactions between RPeL27 and 15 proteins.

**Keywords:** Nasopharyngeal Carcinoma, knockdown, 2D Gel Electrophoresis, RPeL27

***Pengenaplastian dan Pencirian Protein Bersekutu dengan Protein Ribosom, eL27 dalam Sel Karsinoma Nasofarinks***

**ABSTRAK**

*Berdasarkan kefahaman umum, protein ribosom hanya terlibat dalam proses pemasangan ribosom dan sintesis protein tetapi semakin banyak bukti dari penyelidikan tunjukkan potensi fungsi tambahan ribosom dimiliki oleh ribosom. Protein ribosom boleh terlibat dalam pertumbuhan dan pembezaan sel disebabkan banyak penyelidikan telah menghubungkan kanser dengan pernegekspresan protein ribosom. Protein ribosom, eL27 (RPeL27) telah menunjukkan unpkapan perbezaan ketara dalam sel-sel yang berasal dari kanser nasofarinks (NPC) berbanding dengan sel epithelial yang biasa pada kedua-dua tahap transkrip dan protein. Bagaimanapun, interaksi protein dengan RPeL27 dalam NPC tetap tidak diketal. Dalam kajian ini kami mengenalpasti dan mencirikan protein dan proses biologi yang terjejas oleh 'RPeL27-knockdown' dalam sel HK1 melalui siRNA eksperimen 'knockdown', elektroforesis gel 2-dimensi (2D GE), spektrometri massa kromatografi cecair (LCMS) dan analisa bioinformatic. Kami telah berjaya mengenalpasti 15 protein tunjukkan ungkapan protein yang berlain di dalam HK1 dengan 'RPeL27-knockdown' HK1. Semua 15 protein adalah berkaitan dengan kanser dan mengambil bahagian dalam proses biologi yang bertanggungjawab untuk pertumbuhan sel. Kami meramalkan kemungkinan interaksi protein antara RPeL27 dan 15 protein yang dikenalpasti melalui teknik 'in silico'. Penemuan kami memperkuatkan potensi peranan RPeL27 dalam karsinogenesis NPC dan menonjolkan interaksi protein yang mungkin antara RPeL27 dan 15 protein.*

***Kata kunci:*** *Karsinoma nasofarinks, 'knockdown', elektroforesis gel 2-dimensi, RPeL27*