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Enzyme Engineering

Editorial

Exosomes and miRNAs: New Biomarkers?

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INTRODUCTION

Exosomes are small vesicles, between 30 nm to 100 nm in size and endosomal origin, are present in a variety of biological fluLds such as plasma, urine, saliva, semen, among others. He are produced both during and pathological conditions by a variety of cell types. However, this production by tumor cells occurs in greater abundance. Hese vesicles are gaining visibility in oncology studies because of their ability to act at various stages of carcinogenesis and to perform cell-cell communication by transferring their content (peptides, DNA, RNAs, miRNAs and proteins). In tumor context, they also carry oncoproteins, and immune regulatory molecules that may contribute to cancer progression (invasion and metastasis) [1]. Interestingly, those individuals with loss of function mutations of PCSK9 have lower levels of LDL cholesterol and are protected from cardiovascular diseases. Sensitivity of these methods was not satisfactory for the rigorous experiment. Although many of the modified PCR based mutation screening methods have been produced, none of these become popular due to the low sensitivity and/or inconvenience [2]. He possibility of using exosomes as a biomarker for detection, follow-up or prognosis in cancer cases has attracted a great deal of interest in these vesicles since their content reflects the secreting tissue's genomic and proteomic content. Initially, the obtaining of exosomes required sensitive techniques that, for the most part, required ultracentrifugation. However, more modern commercial kits no longer require this step, microcentrifuge with a capacity of at least 10000 g can be used, and this facilitates the analysis of these small vesicles in smaller and less resource researcher laboratories. PCSK9 is a secretory serine proteinase; belong to Pro-Protein Convertase (PCs) family. It was initially discovered by a French group investing a rare genetic disorder of autosomal dominant hypercholesterolemia. PCSK9 has a wide spectrum of mutations in human population. PCSK9 gain of-function variations are associated with hyper cholesterolaemia, whereas loss-of- function variations are associated with hypo cholesterolaemia [3]. Because they are transport-capable vesicles and easily recognized by other cells, their therapeutic potential as a drug carrier, such as the abilityto overcome through the blood- brain barrier or other molecules necessary for proper cell function, is being considered. Among the diverse possibilities of therapeutic use of the exosomes, there is the transport of micro RNAs (miRNA) or anti-miRNA specific to regularize the physiological expression that was lost during the process of carcinogenesis [4].

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Received: March 05, 2021; **Accepted:** March 12, 2021; **Published:** : March 26, 2021

Citation: Carolina (2021) Exosomes and miRNAs: New Biomarkers?. Enz Eng. 10:2.