ABSTRACT

Colorectal cancer (CRC) is categorized as the top three causes of cancer-related deaths worldwide, representing 9.4% of global cancer-related deaths. However, full mechanism of the disease including its prognosis, diagnostics, treatments and monitoring are yet to be fully explored. Utilization of carcinoembryonic antigen (CEA) for CRC monitoring are found to have several disadvantages, thus leading to the study of the potential of myeloid-derived suppressor cell (MDSC) as a novel CRC biomarker. The objective of this study includes comparison of MDSC level in healthy population and CRC patients, trend comparison of MDSC subpopulations and trend comparison of MDSC towards CEA. Levels of both MDSC subpopulations in three different timepoints (D0, D14 & 100%) were observed. The result showed that the PMN-MDSC subpopulation is significantly lower ($P = 0.034$) in the healthy population compared to the CRC patients, but not in the M-MDSC subpopulation ($P = 0.494$). When observed during the timepoints, it is found that only PMN-MDSC has a significant difference in its value change ($P = 0.034$), whereas M-MDSC shows no significant change ($P = 0.765$). Each MDSC subpopulation's level were also separated into decreasing and increasing at D0 to D14. Interestingly, only PMN-MDSC subpopulation which decreased at D0 to D14 showed a significant change throughout the timepoints ($P = 0.0001$ & 0.0342), whereas no significance are found in the other groups. The PMN-MDSC subpopulation level was also compared to CEA in each timepoints, and it was found that there are no significant differences in the CEA groups, indicating that the change in MDSC is more distinguishable compared to CEA. Further study could be conducted to analyze factors affecting the PMN-MDSC level, eliminating unnoticed factors influencing the MDSC levels.

Keywords: *myeloid-derived suppressor cells, colorectal cancer, carcinoembryonic antigen, cancer biomarker*