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KITTIPONG DHANUTHAI: P-GLYCOPROTEIN-MEDIATED
MULTIDRUG RESISTANCE EXPRESSION AND FUNCTIONAL EFFLUX IN
ACUTE MYELOGENOUS LEUKEMIA. THESIS ADVISORS; SUNTAREE
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Chemotherapy is the preferred treatment for patients with acute myelogenous leukemia. The major obstacle for the successful chemotherapeutic treatment is the development of multidrug resistance. P-glycoprotein (P-gp) is believed to mediate the multidrug resistance by acting as an energy-dependent drug efflux pump. This study was designed to use flow cytometer to detect P-gp expression using antibody MRK16 with biotin-streptavidin signal amplification as well as functional efflux activity using rhodamine 123 as P-gp substrate and cyclosporin A as MDR modulator. The results showed that P-gp and functional efflux activity were both detected in 45.83% of cases. P-gp was strongly correlated with functional efflux activity ($p < 0.001$), but not with age ($p = 0.155$), gender ($p = 0.682$), CD34 expression ($p = 0.423$), WBC count ($p = 0.146$) nor FAB subtype ($p = 0.331$). Functional efflux activity was not correlated with age ($p = 0.155$), gender ($p = 0.682$), CD34 expression ($p = 0.105$), WBC count ($p = 0.481$) nor FAB subtype ($p = 0.596$). The identification of P-gp and functional efflux activity has several applications. They can be used as a prognostic indicator and a guide for clinician in selecting the regimens incorporating the MDR modulators or the use of alternative chemotherapeutic agents which are not the substrate of the P-gp.