

Utilization of Expired Platelet Concentrate for Production of Human Platelet Lysate as a Medium for T47D Cell Propagation

Title	Utilization of Expired Platelet Concentrate for Production of Human Platelet Lysate as a Medium for T47D Cell Propagation
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Accreditation	2
Abstract	<p>Background: Platelet concentrate (PC) has a short shelf life (5 days). Expired PC cannot be used for clinical purposes. PC is used for human platelet lysate (HPL) production, which was found to be more effective than FBS at increasing T47D cell proliferation. HPL production using expired PC has not been reported. This study aimed to investigate whether the use of HPL produced from expired PC (storage duration >5 days) can increase the proliferation of T47D cells in vitro. Materials and methods: Expired PC samples with a shelf life of 7 and 11 days were used to produce HPL via freeze/thaw method. pH, total protein content, glucose and albumin levels were measured. The 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay was used to measure proliferation rate and doubling time of HPL-treated T47D cells. Results: After HPL production, the glucose level was influenced by the pH ($p=0.003$), and albumin level was influenced by total protein content ($p=0.030$). HPL stored for 7 and 11 days increased cell proliferation rate by 1.41 and 1.80 times higher than 10% FBS, respectively. HPL produced from expired PC did not cause morphological abnormality of the cells. In this study, the glucose levels affected cell proliferation ($p=0.030$). High glucose levels inhibited T47D cell proliferation. Conclusion: Expired PC can be used as a potential material for HPL production, since HPL produced from expired PC increases cell proliferation rate and shortens cell doubling time. Keywords: cell proliferation, human platelet lysate, platelet concentrate, thrombocyte, T47D</p>
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