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Proliferation and surface marker characterization of adipose stem cells after culture in various processed outdated platelets lysate containing media

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Abstract : Human adipose derived stem cells (hADSCs) can be cultured in outdated platelet lysate (PL) containing medium. Processing of thrombocyte concentrate to get PL can be done by various freeze-thaw cycles. There was no information whether various processed PL containing media gave the same proliferation potential and surface marker expressions. Therefore, the aim of this study was to know the proliferation and surface marker characteristics of hADSCs after expansion in various processed PL containing media. hADCSs were cultured in various processed PL containing media, namely F1, F2, and F3, where the numbers denoted once, twice and three times freeze-thaw cycles. Proliferations were measured on day-2, day-4, day-7, and day-10. Positive surface markers were CD90, CD73, and CD105, while negative markers were a cocktail of CD34, CD45, CD11b, CD19, and HLA-DR. Difference in proliferations and surface marker expressions between F1, F2, and F3 were analyzed by one-way ANOVA.

We found that cell proliferation in F1, F2, and F3 showed no significant difference on day-7 and day-10. The expression levels of CD90 and CD 105 in F1, F2, and F3 were all above 90%, which correspond with mesenchymal stem cells according to the requirement of International Society for Cell Therapy (ISCT). However, CD73 showed highest (97%) expression on F2 and lowest on F3 (81.8%). Negative marker range was 2.4-2.9%. In Conclusion, at the end of culture, hADSCs showed similar profile and proliferation, when cultured in F1, F2, and F3.

Keywords: outdated thrombocyte concentrate, freeze-thaw cycles, platelet lysate, stem cells.

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