Impact of Donor Age on Human Platelet Lysate Quality and its Consequential Effects on HeLa Cell Growth in the Presence of Anti-Cancer Compounds

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Abstract	An integral aspect of anticancer experimentation involves delineating the optimal dosage of the test compound to ascertain its efficacy in targeting malignant cells. Numerous variables may influence a compound's cytotoxicity, among which is the choice of cell culture medium. Within in vitro settings, supplementary mediums are employed to foster cellular proliferation. Platelet lysate (PL) serves as a growth supplement, presenting an alternative to fetal bovine serum (FBS), primarily due to its incorporation of growth factors such as platelet-derived growth factor (PDGF), a component absents in FBS. The integrity of PL may be subject to various factors, including the age of the donor. This study sought to evaluate the impact of donor age on PL quality. Furthermore, it aimed to discern whether PL derived from platelet concentrate (PC) blood components of different age cohorts influences the IC50 value in anticancer compound assessment. Expired PCs were utilized, subsequently classified into age categories: Ã¢Â‰Â¤30 years, >30 years, and a combination of ages. PL analysis encompassed parameters such as pH, blood profile, protein, glucose, and cholesterol levels. The investigation scrutinized the influence of PL quality, as a cellular growth supplement, on the anticancer compound cisplatin's activity against HeLa cells. Findings indicate that donor age influenced the IC50 value of cisplatin on HeLa cells. Notably, elevated cholesterol levels and decreased pH in PL from donor ages >30 years were associated with reduced cisplatin toxicity.Keywords: Cisplatin, Donor Age, HeLa, IC50, Platelet Lysate.
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