

Datasheet

Defibrinated Human Platelet Lysate (hPL)

Media Supplement

Product	Description	Catalogue-No.	Size
Defibrinated Human Platelet Lysate	Media Supplement	P40-28050	50 ml
		P40-28100	100 ml
		P40-28500	500 ml

Product description

Human platelet lysate (hPL) is a *xeno-free* alternative to FBS.

Human platelets lysate is a well promising source of bioactive substances as growth factors not only for *in vivo* wound healing and tissue repair, but also for the expansion of human cells in culture.

Platelets are a natural source of growth factors. They contain growth factors, platelet-derived growth factors (PDGFs), basic fibroblast growth factor (bFGF), transforming growth factor (TGF- β) and insulin-like growth factor-1 (IGF-1). Growth factors contained in hPL, like hormones and cytokines lead to a strong proliferation of human cells in culture and also have influence on the cell function.

HPL is able to promote mesenchymal stromal cell (MSC) expansion, to decrease the time required to reach confluence and to increase CFU-F size, as compared to the FBS medium.¹

Human platelet lysate promotes the expansion of human adherent and non-adherent primary cells and cell lines, including primary mesenchymal stromal cells (MSCs).

MSCs have various unique features, including differentiation potential, colony forming and self-renewal abilities. Human mesenchymal stromal cells (hMSC) are multipotent adult stem cells that are not only able to differentiate into most mesodermic cells but also show a potent immunomodulatory activity. Besides their differentiation potential, MSCs have the ability to secrete various trophic factors such as growth factors, cytokines, etc.

These properties make them an attractive potential therapeutic tool for cell therapy programs.

The presence of serum in cell culture medium presents an obstacle to safe and efficient production of hMSCs for therapeutic purposes. hPL seems to be a powerful and safe substitute for development of tissue- and cell-engineered products using MSCs.

Manufacturing processes

hPL from PAN-Biotech is derived from volunteer donors. The single sample collections are taken from human, healthy donors in certified donation institutions in Europe. The collection of blood follows the EU standards (Directive 2002/98/EC - quality and safety standards for the collection, testing, processing, storage and distribution of human blood and blood components).

According to the EU standards the donors were tested for the following infection parameters: HBsAg, HBV DNA, anti-HCV, HCV RNA, anti-HIV, HIV RNA and Lues serology. It is possible to exclude the window period in case of NAT and antibodies / antigen tests (e.g. HBsAg and HBV NAT) with the current state-of-the-art test according to EU guidelines.

Defibrination carried out by a method developed by PAN-Biotech.

No additional enzymes like Thrombin are required.

Storage conditions

Storage: -20°C
Shipping: on dry ice
Size: 50 ml, 100 ml other sizes on request

Composition

Pooled human platelet lysate (hPL) is made from thrombocytes concentrate. It is a natural product and contains a concentrated mix of thrombocytic growth factors.

Special advantages from defibrinated hPL in comparison to FBS

- *xeno-free* alternative to Fetal Bovine Serum (FBS)
- exclusively human components
- ready – to – use, no additional Heparin is necessary
- hPL is not associated with a risk for xenogenic immune reactions or transmission of bovine micro-organism and prions
- human platelet lysates (hPL) promote *in vitro* mesenchymal stem cell expansion
- hPL is more efficient for *ex vivo* expansion of human MSCs and ASC/ter1 than FBS
- very low batch-to-batch variation
- Immunophenotype of the stem cells is not influenced by hPL
- MSCs cultured in the presence of hPL maintain their osteogenic, chondrogenic, and adipogenic differentiation properties
- no unpredictable stem cell differentiation
- reduced cellular senescence after long term cultivation with hPL

Instructions for use

PL is a human-derived alternative to fetal bovine serum in cell culture and can be used for a broad range of different cell types such as human endothelial cells, human fibroblasts and MSCs from various tissues. We recommend the use of 2.5% - 7.5% hPL. The optimal concentration must be determined for each cell type, cell line, and/or application.

Thaw hPL at RT or in 37°C water bath. Gently shake flask to mix it. Avoid repeated thaw - freeze cycles. After thawing, aliquot hPL in small working volumes and store at -20°. Do not refreeze aliquots after thawing. As this platelet Lysate is already completely defibrinated, no additional Heparin is required (ready-to-use).

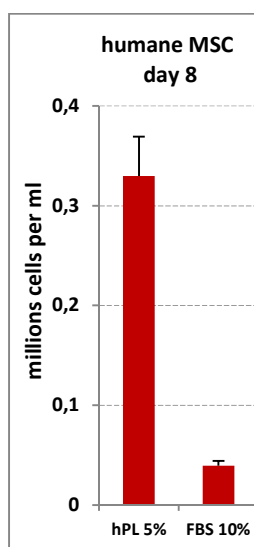
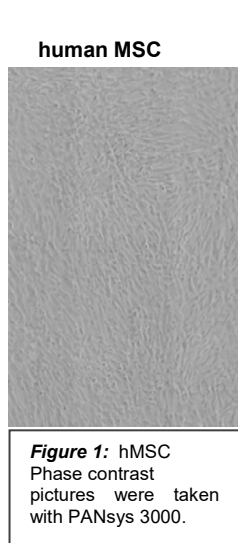
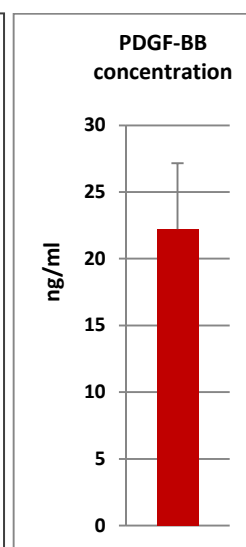
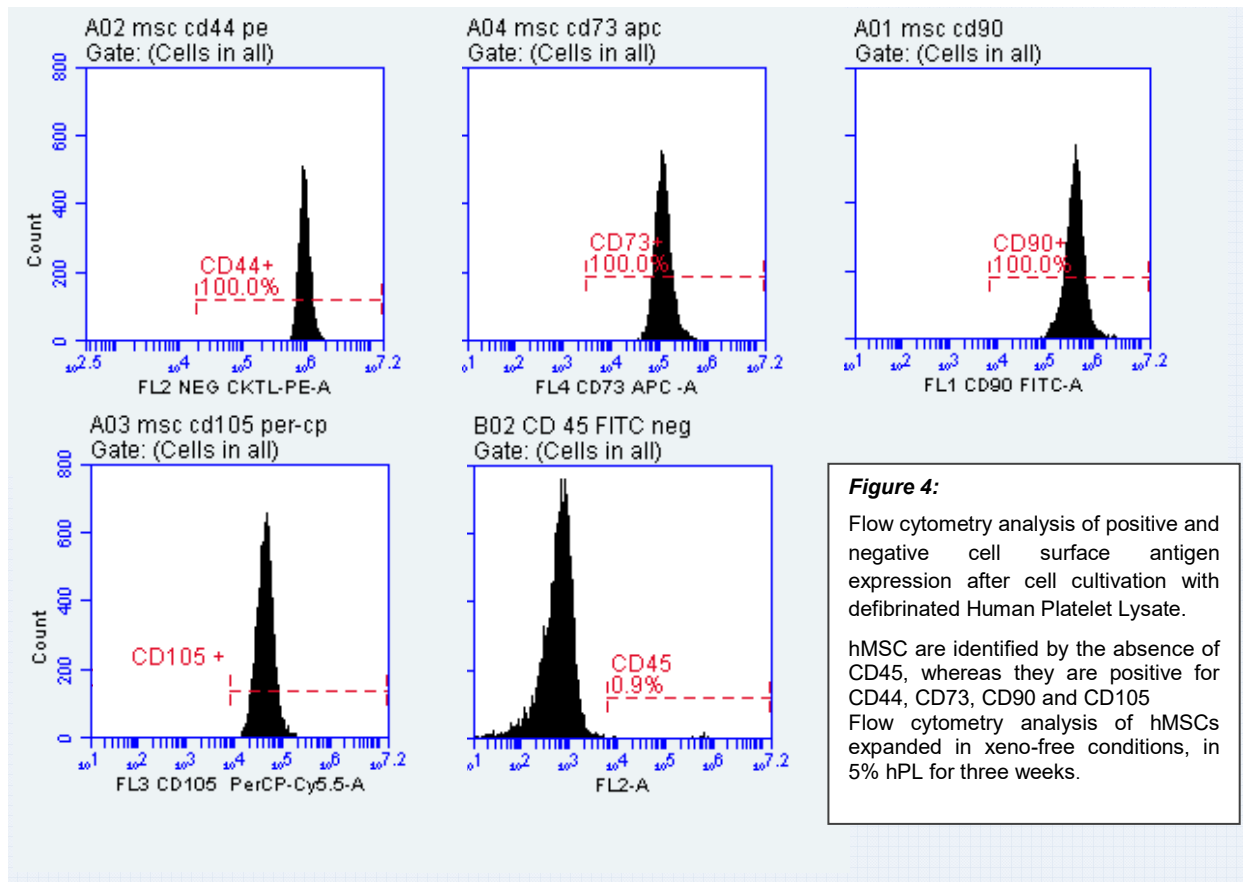


Figure 2: human MSC proliferation. Fibroblasts were expanded in presence of hPL or FBS. Picture is showing the average of three independent experiments. Growth-conditions: 2000 cells per ml / growth area 1.9 cm², medium (DMEM with 4.5g/L Glucose) contains 5% hPL or 10% FBS. During the growth phase the medium was not changed. After 8 days the cell density was determined.

Figure 3: PDGF-BB concentration in hPL. For product characterization, growth factor analysis was performed for PDGF-BB. Picture is showing the average of four independent experiments



Surface Membrane Marker Expression



Literature recommendations

- 1) Platelet Lysates Promote Mesenchymal Stem Cell Expansion: A Safety Substitute for Animal Serum in Cell-Based Therapy Applications
Christelle Doucet et al., JOURNAL OF CELLULAR PHYSIOLOGY (2005)

Technical support

For technical support, questions or remarks please contact your local PAN-Biotech partner or the technical department of PAN-Biotech via email (info@pan-biotech.com) or phone +49-8543-601630.

FOR RESEARCH USE ONLY! Not approved for human or animal diagnostic or therapeutic procedures.