Title (en)

PROCESS FOR SEPARATING BLOOD CELL-CONTAINING LIQUID SUSPENSIONS BY FILTRATION.

Title (de)

VERFAHREN ZUM TRENNEN VON BLUTZELLEN ENTHALTENDEN FLÜSSIGEN SUSPENSIONEN DURCH FILTRIERUNG.

Title (fr)

PROCEDE DE SEPARATION DE SUSPENSIONS LIQUIDES CONTENANT DES GLOBULES SANGUINS PAR FILTRATION.

Publication

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Application

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Priority

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Abstract (en)

[origin: WO7901121A1] A blood cell-containing liquid suspension is separated into a cell-containing fraction and a cell-free fraction by filtration. The suspension, under pressure, is conducted in laminar flow across the surface of a microporous membrane (18, 118) along a flow path (12, 112) which is substantially parallel to the upstream side of the membrane (18, 118), the cell-containing fraction being recovered from the outlet end (16, 116) of the flow path (12, 112) and the cell-free fraction being recovered as filtrate (24, 124). The process is carried out under conditions providing a high filtration rate per are a of membrane (18, 118) without causing damage to the blood cells. This is done by controlling the membrane wall shear rate of the suspension along the flow path (12, 112) so that such shear rate is sufficiently high to induce axial cell migration and inhibit interactions of the cells with the membrane surface (18, 118) at the requisite pressure conditions. Such shear rate is also maintained sufficiently low so as not to itself induce damage of the cells. Useful applications of the process include the separation of plasma from whole blood in a continuous flow plasma-pheresis procedure, and the removal of cryoprotective agents from previously frozen, thawed preparations of red blood cells, white blood cells, or platelets.

Abstract (fr)

Une suspension liquide contenant des cellules sanguines est separee en une fraction contenant des cellules et une fraction sans globules, par filtration. La suspension sous pression est conduite par un ecoulement laminaire a travers la surface d'une membrane microporeuse (18, 118) le long d'un passage d'ecoulement (12, 112) qui est sensiblement parallele au cote amont de la membrane (18, 118), la fraction avec cellules etant recuperee la sortie (16, 116) du passage d'ecoulement (12, 112) et la fraction sans cellules etant recuperee comme filtrat (24, 124). Le procede s'effectue dans des conditions procurant un taux de filtration par unite de surface de membrane (18, 118) eleve sans endommager les cellules sanguines. Ceci est realise par commande du taux de separation de la suspension sur la paroi de la membrane le long du passage d'ecoulement (12, 112) de sorte que l'on ait un taux de separation suffisamment eleve pour induire une migration axiale des cellules et inhiber les interactions des cellules avec la surface de la membrane (18, 118) dans les conditions de pression requises. Ce taux est maintenu assez bas pour eviter qu'il n'endommage les cellules. Les applications utiles du procede comprennent la separation du plasma du sang par plasmapherese a ecoulement continu, et l'enlevement d'agents cryoprotecteurs de preparations degelees, prealablement congelees, de globules rouges, de globules blancs, ou de plaquettes.

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