APPLICATION NOTES

Product: HuSu-TRANS-HSC

PROGENITOR CELLULAR PLATFORM – AN INVITRO TOOL TO TEST ON HUMAN HEMATOPOEITIC SYSTEM

Product Description:

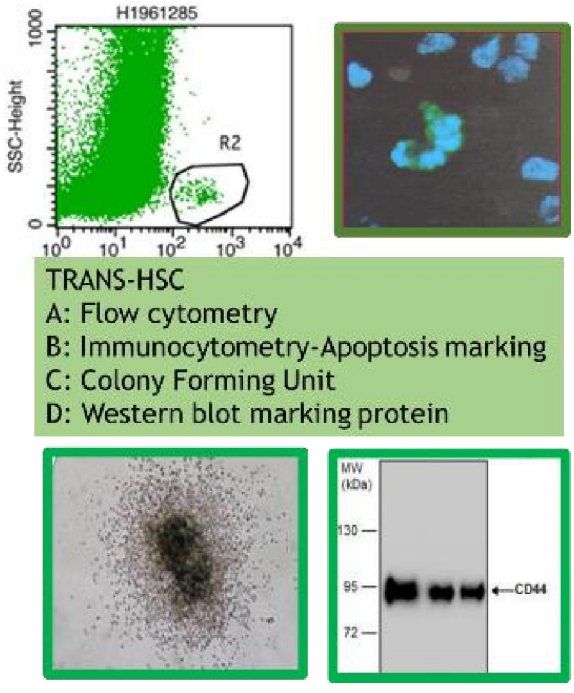
TRANS-HSC is an *invitro* sourced primary progenitor/stem cell based platform model composed of magnetically fractionated CD34+ cell aggregates. Each unit is tested negative for HIV-1, HBV, HCV, Mycoplasma, Bacteria, Yeast and Fungi. Available in frozen condition (in DMSO). Ready to use with customized number per vial.

Recommended:

As an invitro platform tool to test chemical libraries, hit molecules, leads and Investigational New Drug candidates, Known chemo drugs.

Measurable end points:

CD34+ cells related quantification, Apoptosis, Detectable proteins, Colony Forming Units



Stability & Storage:

Product is stable at -80°C or colder for 8 months from date of receipt. Thawed units must be used immediately.

Instructions to use HuSu-TRANS-HSC:

Thaw, Decant, Add medium to acclimatize, Centrifuge, Reconstitute the pellet to seed.

Advantages using HuSu-TRANS-HSC:

Ready to use, Acts as a tool to simulate human hematopoietic system outside human body.

Features:

Fractionated sterile CD34+ cell aggregates packaged as units; processed, pooled batch wise to be bioburden free.

Benefits:

Made available from abundantly sourced biological material with no MTA.

TRANS-HSC for:

Type of testing: Invitro for testing, screening efficacy and toxicity.

Level of assessment: Test material's property and relevance to human hematopoietic system.

Purpose of testing: Exploratory preclinical evaluation of chemical library, hits, leads, investigational new drug candidates, known drugs for human application and compatibility

Some of the tested chemo drugs on TRAN-HSC are Rocaglamide, Vinblastine, Ponatinib, and Paclitaxel

AN INVITRO PLATFORM THAT MIMICS HUMAN HEMATOPOIETIC SYSTEM

BACKGROUND:

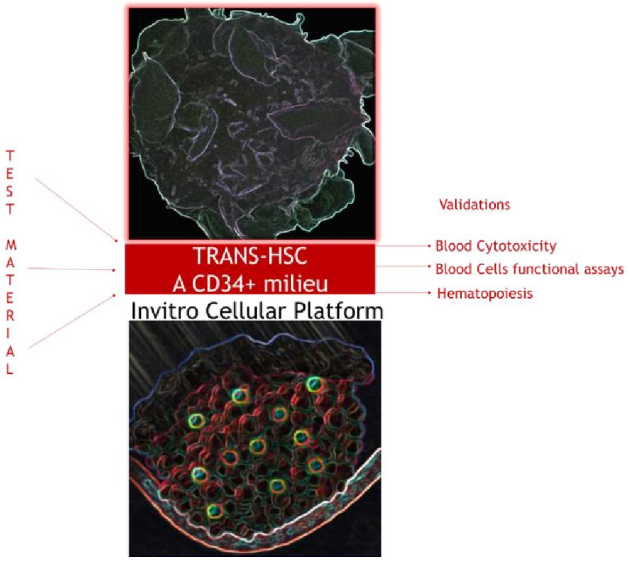
There are many types of blood disorders, which can involve problems with red blood cells, white blood cells, platelets, blood vessels, bone marrow, lymph nodes, or the proteins involved in bleeding and clotting.

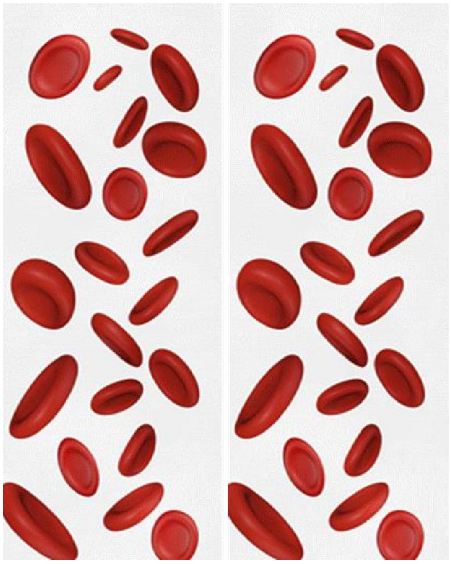
Several types of Anaemia, Thalassemia, and Haemophilia are a few common disorder types. Haematopoiesis is the formation of blood cellular components. All cellular blood components are derived from haematopoietic stem cells while CD34+ cells (HSC type) are multipotent, self-renew and also produce mature blood cells, such as erythrocytes, leukocytes, platelets, and lymphocytes. On the other hand, adjuvant chemotherapeutic agents have cytotoxic effects on hematopoietic progenitor compartment leading to adverse side effects. The hematopoietic system is highly proliferative and thus sensitive to anti-proliferative drugs such as chemotherapeutics while for many of these drugs, suppression of the hematopoietic system is the dose-limiting toxicity.

In the above cited both cascade of events, haematopoiesis is the process if quantified/analyzed under the influence of any extraneous test agent will result in new data sets that can support the discovery and development of transformative medicine.

The inability to culture hematopoietic stem cells (HSCs) in vitro remains a significant problem in HSC biology. This dilemma hampers study of various hematologic pathologies, as well as disease modelling and drug testing efforts to understand and treat these disorders. Recent studies focus on reprogramming pluripotent stem cells or somatic cells to generate HSCs, with most success found in those that attempt to follow the known details of developmental haematopoiesis. These stem cell platforms however fall short of generating the bona fide HSC.

CD34+ cellular and fractionated preparations (not reprogrammed or induced) mimic human original hematopoietic system while can be utilized as progenitor cell based invitro platform to discover new drug candidates causing haematopoiesis or measure toxicity induced by drugs prescribed for HSC transplantations.





Biomimetic 3D models of the HSC niche that allow to control HSC behavior *in vitro* and to test drugs in a human setting are relevant for the clinics and pharmacology.