Myoridge

Myoridge Co.Ltd.

Application No.9

MSCmedium

We can provide a culture medium suitable for your specific purpose.
Please feel free to contact us for a consultation.

Switch to Animal origin free

Enhance cytokine production

Inhibit cell aggregation

Xeno-Free Medium
2023~
No human-derived components

Animal-Origin-Free Medium
2023~
No animal-derived components

Mammalian MSC Medium
2024~
For the proliferation of canine-derived MSCs

Cytokine Production Medium
2024~
Successfully enhanced the cells' cytokine production

Blood Coagulation Inhibitory Medium
2024~
Inhibits the expression of CD142, a cellular procoagulant factor

Medium for 3D Culture
2024~
Successfully suppressed cell aggregation

MSC Establishment Medium
2025~
Optimized for MSC establishment

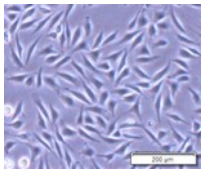
Since developing serum-free medium for MSCs in 2022, we have continued development tailored to user needs.

Case 1: Inhibition of Cell Enlargement by Xeno-Free Medium

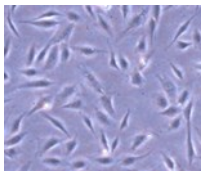
While hMSCs are observed to have a tendency toward cell hypertrophy upon repeated passaging, hMSCs cultured in our Xeno-Free Medium showed suppressed hypertrophy and maintained a more undifferentiated state compared to cells cultured in competitor media or FBS + GF medium.

*FSC (Forward scatter) = Indicates cell size.

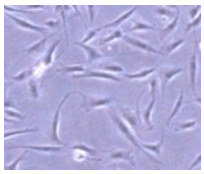
our Xeno-Free Medium



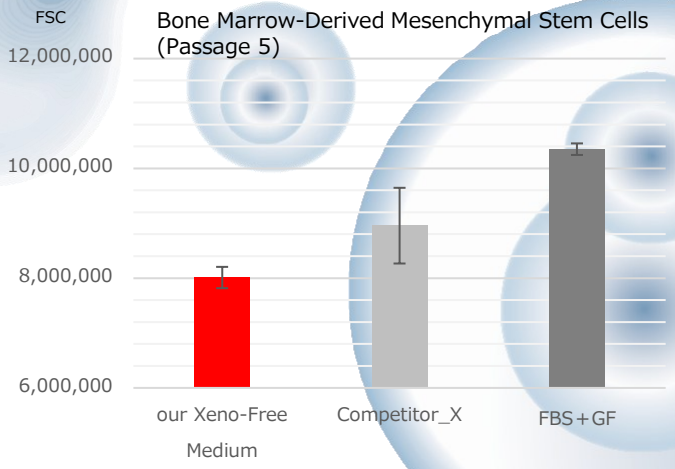
Competitor-X



10%FBS＋GF*

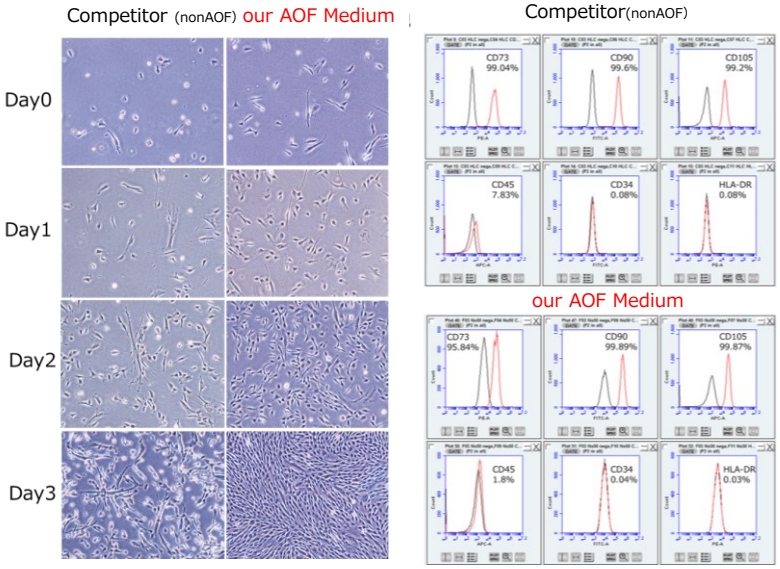


*10% FBS + GF: Medium supplemented with growth factors added to 10% FBS medium.



Case 2: Animal-Origin-Free Medium

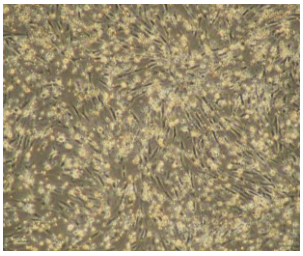
Out of more than 20 candidate media, two Animal-Origin-Free (AOF) media were able to support proliferation for 4 passages or more, and the surface markers showed high values compared to the control medium.



Case 3: Culture of Canine MSC Lines

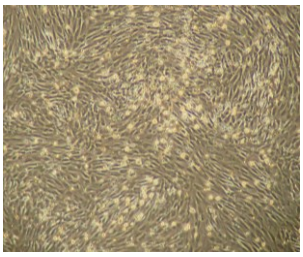
We enabled the culture of canine amniotic membrane MSC lines in serum-free medium, previously requiring FBS serum medium.

Competitor serum free Medium



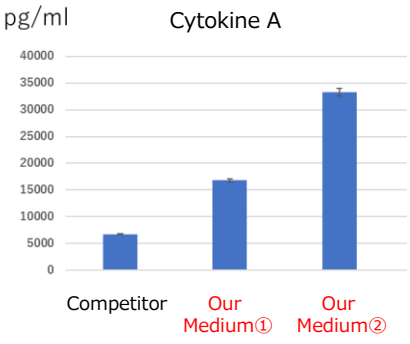
A high number of dead cells are observed in suspension.

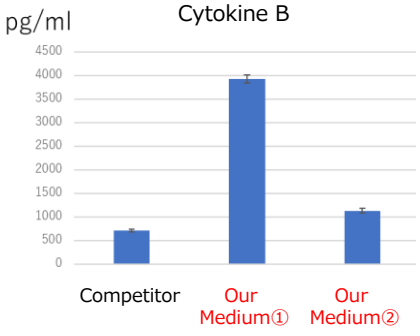
our serum free Medium



Showed good proliferation.

Case 4: Evaluation of Cytokine Production





Umbilical cord-derived MSCs were cultured in T25 flasks using a competitor medium, our medium ①, and our medium ② for four days. The culture supernatant was then collected, and the cytokine concentration was measured using ELISA.

Compared to the competitor medium, our medium ① and our medium ② showed higher cytokine concentrations in the culture supernatant, and also tended to show higher production per cell count.

Regarding the production of Cytokine A, our medium ② showed a higher tendency than our medium ①, while for Cytokine B, our medium ① showed a higher tendency.

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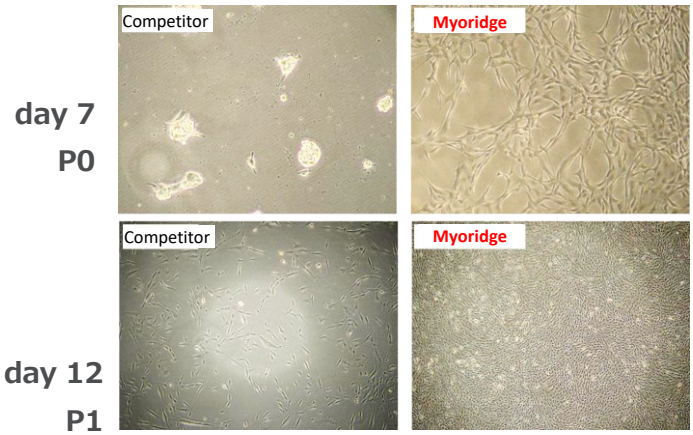
Case 5 : Shortening the Manufacturing Timeline via Refined MSC Establishment and Culture Protocol from Adipose Tissue

The conventional method for recovering over 100 million MSCs, starting from seeding a small amount of adipose tissue, typically takes 4 to 7 weeks. However, by using our improved establishment and expansion protocol and medium, it is now possible to culture them within 2 to 3 weeks (only 2 passages) without the use of special equipment.

adipose tissue

Establishment Process	Expansion Process
Establishment Medium ５０～１００mL	Proliferation Medium ５００～７００mL
７～１４ days	**５～１０days**

Our MSC medium supported proliferation up to 1x10e9 cells after 16 days of culture.

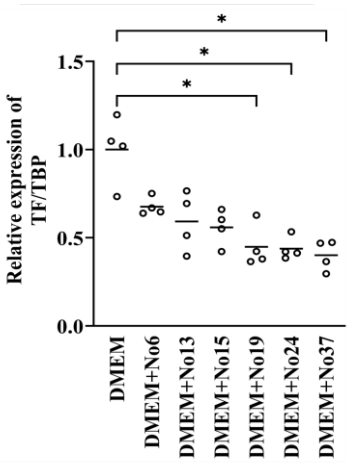


Microscopic Comparison of Cultured MSCs Established from 0.2 g of Adipose Tissue: Competitor Medium vs. Our MSC Medium

Comparison of Cell Counts of MSCs Established from 0.2 g of Adipose Tissue in Competitor Medium and Our MSC Medium

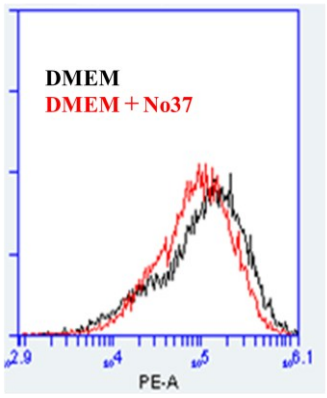
Case 6: Development of a Culture Supplement to Suppress Tissue Factor (TF) Expression Related to the Prothrombotic Potential of MSCs

Tissue factor (TF; CD142), one of the extrinsic blood coagulation factors, is considered a contributing factor to the prothrombotic potential of MSCs.We screened over 3,000 small molecule compounds from our library to identify those effective in inhibiting TF. This resulted in the development of a culture supplement capable of suppressing TF expression even in FBS-containing medium.We performed the following three evaluations on Adipose-Derived MSCs (ADSCs) cultured in DMEM/10%FBS supplemented with 6 hit supplements (No. 6, 13, 15, 19, 24, 37) identified during screening:



Supplements No. 19, 24, and 37 significantly suppressed TF expression.

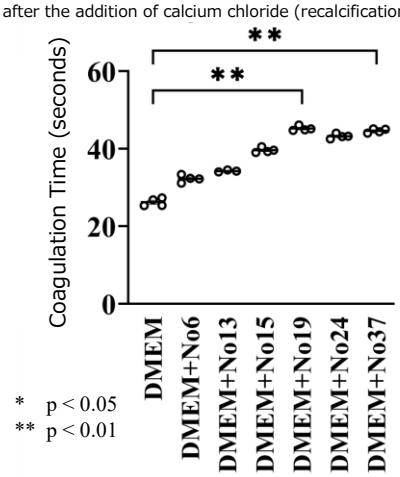
FCM Evaluation of Cell Surface TF Quantity



The amount of TF on the ADSC surface was decreased in the supplement-added group.

Clotting Time Measurement of ADSCs and Human Plasma (Clotting Assay)

ADSC cell suspension (1.5 x 10e5 cells/mL, containing citrate) was mixed with an equal volume of human blood plasma. The mixture was set in an automatic coagulation measuring device (CA-104, Sysmex), and the clotting time (seconds) after the addition of calcium chloride (recalcification) was measured.



CA-104, Sysmex

ADSCs cultured with Supplements No. 19 and 37 showed a significant extension of the coagulation time when mixed with human plasma, indicating a reduction in procoagulant potential.