

Rapid, Consistent, Cost-Effective Cell Culture!

Optimizing Your Stem Cell Culture

AventaCell BioMedical's **UltraGRO™** & **UltraGRO™-Advanced**, from their Helios BioScience line of products, were developed to be cell culture supplements rich in growth factors and cytokines, as alternatives for FBS, to optimize in-vitro culture of primary human stem cells. **UltraGRO™** & **UltraGRO™-Advanced** are manufactured under good manufacturing conditions from human platelets, collected from healthy donors by FDA licensed blood centers, to provide you with safe, consistent, and high performance cell culture supplements.

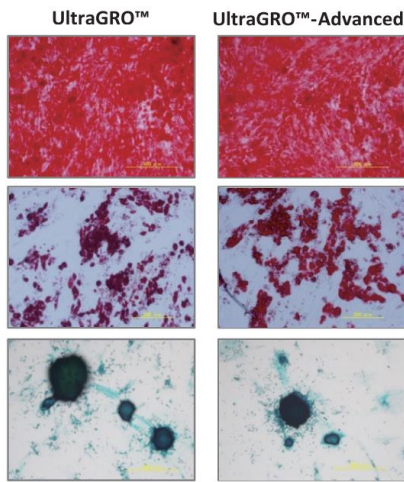


Fig. 1: Human adipose tissue derived MSCs cultured in UltraGRO™ or UltraGRO™-Advanced for 3 passages can be differentiated in vitro assay. (A) Osteogenic differentiation was analyzed by Alizarin red staining, 100x magnification; (B) adipogenic differentiation was analyzed by Oil Red O staining, 200x magnification; and (C) chondrogenic differentiation was analyzed by Alcian Blue staining, 100x magnification.

Ordering Information

Order Number	Product	Heparin Use	Volume (mL)
HPCPLCRL05	UltraGRO™	Required	50
HPCPLCRL10			100
HPCPLCRL50			500
HPCPLCGL05	UltraGRO™ (GMP Grade)	Required	50
HPCPLCGL10			100
HPCPLCGL50			500
HPCFDCRL05	UltraGRO™-Advanced	Not required	50
HPCFDCRL10			100
HPCFDCRL50			500
HPCFDCGL05	UltraGRO™-Advanced (GMP Grade)	Not required	50
HPCFDCGL10			100
HPCFDCGL50			500

Benefits of UltraGRO™/UltraGRO™-Advanced

- Non-xenogeneic serum substitute
- Replace 10-20% FBS with 5% UltraGRO™/UltraGRO™-Advanced
- Better performance than FBS in primary isolation and expansion cultures
- Shorten population doubling times (20~30 hrs)
- No adhesion factors needed
- Lot to lot consistency
- Cost-effective choice for lower cost per million cells produced
- No heparin required for UltraGRO™-Advanced
- Competitive pricing

Shorter Doubling Time on hMSCs Culture

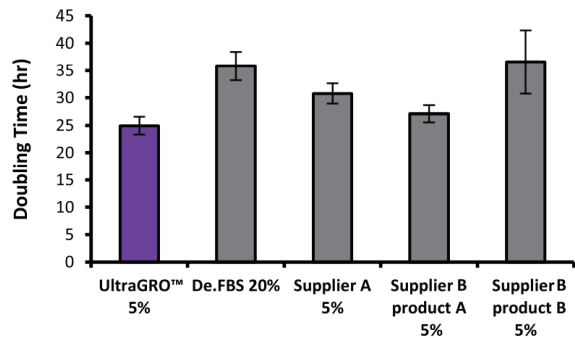


Fig. 2: Performance of UltraGRO™ medium supplement for hBM-MSCs growth in comparison to defined FBS (De. FBS), and human platelet lysates of various suppliers.

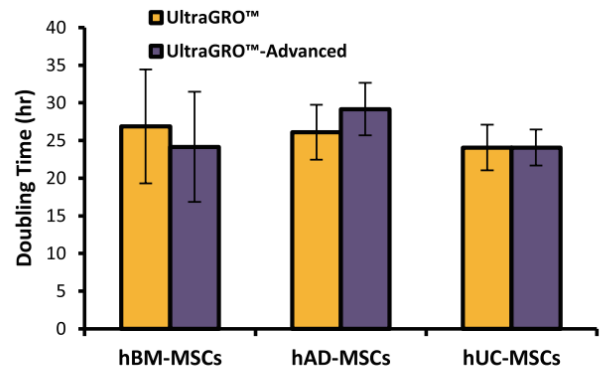


Fig. 3: Performances of UltraGRO™ and UltraGRO™-Advanced for human MSCs from bone marrow (BM), adipose tissue (AD), and umbilical cord (UC) growth. Data is expressed as a mean value of 5 passages ± SD.



Support Adhesion Cells Growth

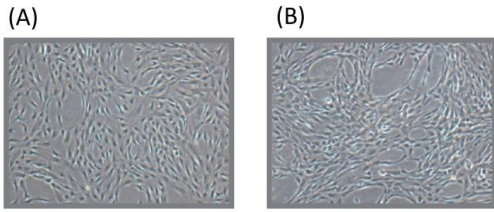


Fig. 4: Cell morphology. (A) 20% FBS and (B) 5% UltraGRO[™] cultured hUC-MSCs exhibited spindle-shaped morphology in Passage 3.

Lot-to-lot consistency

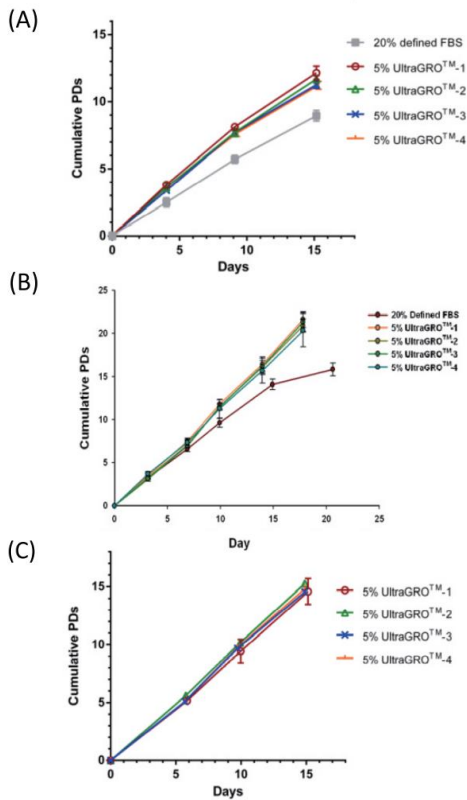


Fig. 5: Lot-to-lot consistency was assessed by cell culture of human BM-, AD-, and UC-MSCs.

**UltraGRO[™] and UltraGRO[™]-Advanced
can meet your needs!!**



Maintain Cell Surface Phenotype

Cell Type	Supplement	CD105	CD90	CD73	CD44	CD45	CD34
hBM-MSCs	FBS	99.73%	99.76%	96.66%	96.53%	0.05%	0.16%
	UltraGRO [™]	99.86%	99.94%	97.92%	99.59%	0.02%	0.02%
	UltraGRO [™] -Advanced	99.37%	99.97%	99.80%	99.86%	0.68%	1.24%
hAD-MSCs	FBS	99.82%	99.93%	97.95%	98.60%	0.06%	0.06%
	UltraGRO [™]	99.72%	99.38%	96.37%	97.21%	0.00%	0.10%
	UltraGRO [™] -Advanced	99.51%	100%	99.64%	99.98%	1.41%	0.08%
hUC-MSCs	FBS	99.77%	99.92%	91.33%	97.93%	0.13%	0.35%
	UltraGRO [™]	99.04%	99.98%	99.99%	99.79%	0.02%	0.37%
	UltraGRO [™] -Advanced	98.03%	99.96%	99.67%	99.79%	1.31%	1.64%

Fig. 6: Phenotype of hMSCs exposed to 20% FBS, 5% UltraGRO[™], or 5% UltraGRO[™]-Advanced. hMSCs derived from bone marrow (BM), adipose tissue (AD), and umbilical cord (UC) cultured in 20% FBS, 5% UltraGRO[™], or 5% UltraGRO[™]-Advanced for 5 passages displayed characteristic expression of MSC surface markers.

Maintain Embryonic Stem Cell Pluripotency

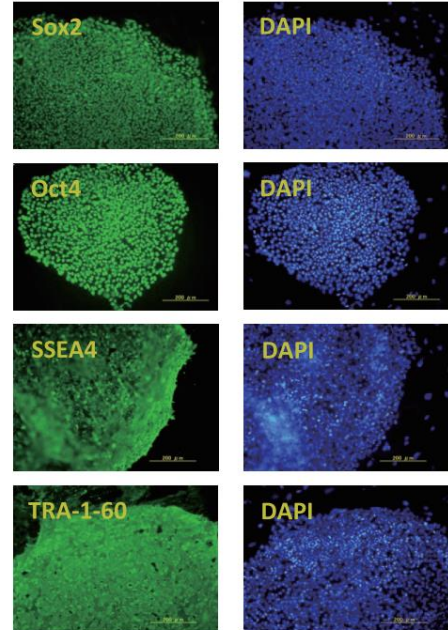


Fig. 7: Human embryonic stem cells grown in 2.5% UltraGRO[™]-Advanced on a MEF feeder layer for 10 passages were assayed for the undifferentiated state by IF staining for the pluripotency markers.

