



# humankine<sup>®</sup> GMP-grade Cytokines and Growth Factors

Largest portfolio of GMP-grade recombinant proteins in the market

Growth factors and cytokines are key raw materials/ ancillary materials required for the manufacturing of cell-based therapies. As the demand for autologous and allogeneic cell therapy is rapidly growing, the need for high quality raw material is becoming

increasingly important. Keeping quality as our motto, Proteintech GMP-grade HumanKine growth factors and cytokines are manufactured in accordance with USP, WHO and ISO standards, which ensures maximum patient safety.

**Our human expansion system ensures that proteins have native conformation and post-translational modifications to optimize biological activity. No expression tags, xeno-free... just high quality.**



**Animal component free**



**Endotoxin free**



**Xeno free**



**Tag free**



**Carrier free**

## Reasons to choose HumanKine<sup>®</sup> GMP proteins:

- ISO13485 certified
- Continuously restocked inventory and prompt shipment
- Quality check at every step of production
- High lot-to-lot consistency
- ISO-rated cleanrooms for manufacturing and filling
- Raw material qualification and traceability
- Expert support

### RUO to GMP, the same protein

The master cell line and manufacturing process are the same for GMP grade and research-use-only cytokines and growth factors, which minimizes risk and comparability testing and facilitates a seamless translation.



Scan the QR Code for more information on Humakine products

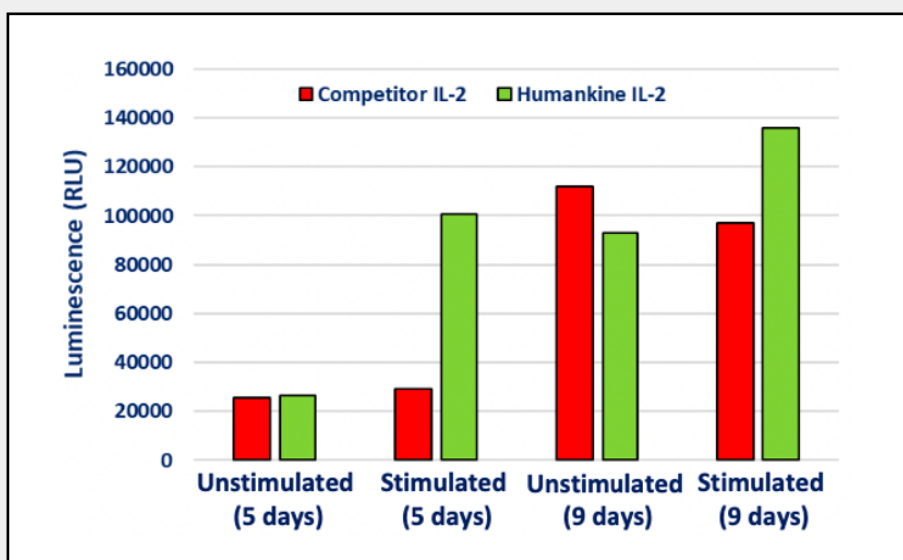


## Humankine® GMP Quality

Proteintech is ISO 13485:2016 certified and our GMP Humankine products are manufactured and tested in accordance with the relevant sections of the following standards:

- USP Chapter <1043>, Ancillary Materials for Cell, Gene, and Tissue-Engineered Products.
- WHO TRS, No. 822, 1992 Annex 1 Good Manufacturing Practices for Biological Products
- USP Chapter <92>, Growth Factors and Cytokines used in Cell Therapy Manufacturing.
- USP <71> sterility testing.
- Ph. Eur. General Chapter 5.2.12, Raw Materials of Biological Origin for the Production of Cell-based and Gene Therapy Medicinal Products.
- USP<63> Mycoplasma testing.
- USP<85> Bacterial endotoxin testing.

## Humankine® IL-2 treatment results in greater levels of T-cell expansion and proliferation.

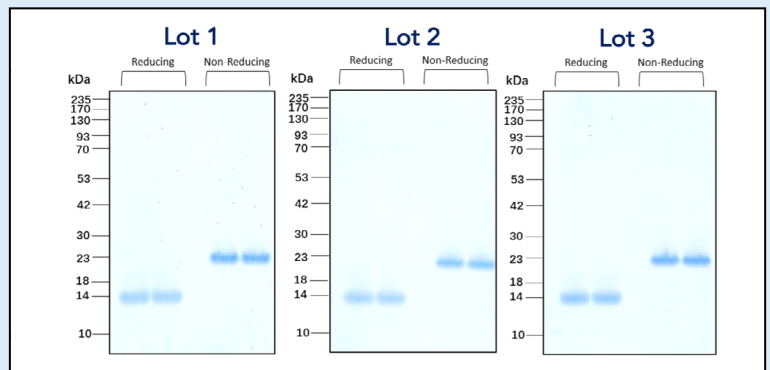
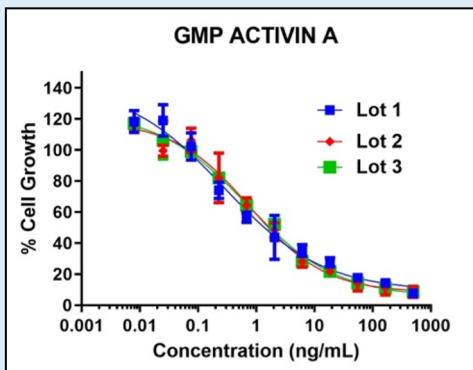


◀ Cultures were treated with either competitor IL-2 (red) or Humankine® IL-2 (green), and then left unstimulated (control) or stimulated with 1  $\mu$ M zoledronic acid. Increased cell proliferation was seen in the stimulated cultures treated with Humankine® product.

Source: Dr. Leonardo Castrillo and Dr. Alessandro Poggi, IRCCS Ospedale Policlinico San Martino, unit of Molecular Oncology and Angiogenesis, Genoa, Italy.



# High Lot-to-Lot Consistency with **human**kinine<sup>®</sup> GMP-grade Cytokines and Growth Factors



▲ **GMP Activin A (HZ-1138-GMP)** | Three independent lots of GMP grade Activin A were tested for their ability to inhibit the proliferation of MPC-11 (mouse plasmacytoma) cells. The EC50 for this assay is 0.5-3.5 ng/mL. The activity of each lot is nearly identical to each other. Each lot was also analyzed for purity on an SDS-polyacrylamide gel under reducing and non-reducing conditions.

## Guaranteed Quality at Every Step of Production

Quality Attributes	GMP Grade	Quality Attributes	GMP Grade
Documented Processes (QMS)	✓	Systematic and Organized Training Program for Qualified Personnel	✓
Raw Material and Vendor Qualification	✓	Drug master files (DMF)	In progress
Routine Monitoring and Qualification of Cleanrooms, Instruments, and Equipment	✓	Deviations and Corrective Action Preventative Actions (CAPA)	✓
Validated Manufacturing Processes and Assays	✓	Final Product QC Release	✓
Well Defined Standards and In-Process Quality Checks (IPQC)	✓		



## HumanKine<sup>®</sup> Recombinant GMP-grade Human Proteins

Protein Name	Catalog No.	Activity (EC 50)	Purity
Activin A	HZ-1138-GMP	0.5-3.5 ng/mL	> 95%
BMP-2	HZ-1128-GMP	7.5-37.5 ng/mL	> 95%
BMP-4	HZ-1045-GMP	1.5-9 ng/mL	> 95%
Cystatin C	HZ-1211-GMP	0.5-2.6 µg/mL	> 95%
FGF-7 (KGF)	HZ-1100-GMP	4-20 ng/mL	> 95%
FGFbasic-TS	HZ-1285-GMP	0.07-0.4 ng/mL	> 95%
FLT3 Ligand	HZ-1151-GMP	0.4-3.0 ng/mL	> 95%
G-CSF	HZ-1207-GMP	0.009-0.05 ng/mL	> 95%
GM-CSF	HZ-1002-GMP	0.08-0.8 ng/mL	> 95%
HGF	HZ-1084-GMP	5-25 ng/mL	> 95%
HGH	HZ-1007-GMP	0.02-0.120 ng/mL	> 95%
HSA	HZ-3001-GMP	N/A	> 95%
IFN Alpha 2B	HZ-1072-GMP	0.004-0.02 ng/mL	> 95%
IFN Beta	HZ-1298-GMP	0.015-0.08 ng/mL	> 95%
IFN Gamma	HZ-1301-GMP	0.02-0.14 ng/mL	> 95%
IGF-I	HZ-1322-GMP	2-14 ng/mL	> 95%
IL-2	HZ-1015-GMP	0.05-0.35 ng/mL	> 95%
IL-3	HZ-1074-GMP	0.4-2.0 ng/mL	> 95%
IL-4	HZ-1004-GMP	0.07-0.4 ng/mL	> 95%
IL-6	HZ-1019-GMP	0.03-0.24 ng/mL	> 95%
IL-7	HZ-1281-GMP	0.2-1.4 ng/mL	> 95%
IL-9	HZ-1240-GMP	0.1-0.6 ng/mL	> 95%
IL-10	HZ-1145-GMP	0.18-2.0 ng/mL	> 95%
IL-12	HZ-1256-GMP	1-5 ng/mL	> 95%
IL-15	HZ-1323-GMP	0.07-0.37 ng/mL	> 95%

Protein Name	Catalog No.	Activity (EC 50)	Purity
IL-28A	HZ-1235-GMP	0.01-0.06 ng/mL	> 95%
LIF	HZ-1292-GMP	0.045-0.25 ng/mL	> 95%
M-CSF	HZ-1192-GMP	0.7-4.0 ng/mL	> 95%
Noggin	HZ-1118-GMP	3-15 ng/mL	> 95%
PDGFbb	HZ-1308-GMP	0.3-3 ng/mL	> 95%
SCF	HZ-1024-GMP	15-85 ng/mL	> 95%
TGF Beta 1	HZ-1011-GMP	0.01-0.17 ng/mL	> 95%
TGF Beta 2	HZ-1092-GMP	0.018-0.18 ng/mL	> 95%
TGF Beta 3	HZ-1090-GMP	0.15-0.75 ng/mL	> 95%
TNF Alpha	HZ-1014-GMP	0.002-0.026 ng/mL	> 95%
VEGF165	HZ-1038-GMP	0.3-3.75 ng/mL	> 95%
Wnt3A	HZ-1296-GMP	25-125 ng/mL	> 95%
EGF	HZ-1326-GMP	0.1-0.6 ng/mL	> 95%
OSM	HZ-1030-GMP	0.1-1.5 ng/mL	> 95%
FGF-8B	HZ-1103-GMP	10-60 ng/mL	> 95%
IL-21	HZ-1319-GMP	0.25-1.25 ng/mL	> 95%
Transferrin	HZ-1317-GMP	75-400 ng/mL	> 95%
BMP-7	HZ-1229-GMP	50-275 ng/mL	> 95%
FGF-4	HZ-1218-GMP	6-30 ng/mL	> 95%
TPO	HZ-1248-GMP	100-500 ng/mL	> 95%
Thrombin (Coagulation Factor II)	HZ-3010-GMP	1000-5000 units/mg	> 95%
BDNF	HZ-1335-GMP	4- 40 ng/mL	> 95%