CellGenix
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TECHNOTE

CellGenix® rh TGF-β1 – Preclinical vs GMP

To allow for a seamless transition from preclinical development to the clinical stage, we offer both preclinical and GMP cytokines. Both product grades are produced under the same conditions, using identical production steps and expression systems. This ensures equal product quality and performance.

The difference between both quality levels is that we offer a more comprehensive QC testing including tighter specifications and documentation for our GMP product. Our preclinical grade product, therefore, offers a cost-efficient alternative for the early development phase when regulatory support and quality of raw materials have a lower priority and access to GMP-relevant documentation is not required yet.

Preclinical grade: Intended for preclinical *ex vivo* use

GMP grade: Intended for *ex vivo* use in clinical trials and commercial ATMP manufacturing

Starting material	Preclinical grade	GMP grade
CAP® MCB characterized according to ICH Guidelines Q5A and Q5D	yes	yes
Biologics Master File (BB-MF) for the originating CAP® cell bank available	yes	yes
Manufacturing process	**Preclinical grade**	**GMP grade**
Formulation	1% mannitol in WFI	1% mannitol in WFI
Filling and lyophilization under class A in B environment	yes	yes
ADCF Level 1: The final product contains neither animal- nor human-derived materials. No animal- or human-derived materials are used in manufacturing, except the starting material transformed CAP® MCB	yes	yes
Product specifications	**Preclinical grade**	**GMP grade**
Identity of product	(#P01137, Ala279-Ser390)	(#P01137, Ala279-Ser390)
Activity value on CoA	≥ 9 x 10^6 IU/mg	9 – 36 x 10^6 IU/mg
Determination of host cell DNA content	n.a.	≤ 20.0 ng/mg
Mycoplasma testing of USP harvest: Ph. Eur. 2.6.7	n.a.	negative
Sterility testing	sterile	sterile (Ph. Eur. 2.6.7, USP <71>)
Purity	≥ 95%	≥ 97%
Endotoxin testing: Ph. Eur. 2.6.14, USP<85>	≤ 10 EU/mg	≤ 10 EU/mg
Expiry date specified on CoA	yes	yes
Product Related Proteins	n.a.	< 5 %
Host Cell Protein*	n.a.	n.a.

*The production process has been validated to demonstrate suitable clearance of host cell proteins (≤ 1 µg/mg).

Quality assurance	Preclinical grade	GMP grade
All processes according to released SOPs	yes	yes
Access to batch documentation	yes	yes
Production and QC equipment qualified	n.a. ***	yes
Monitoring of clean room production environment	n.a. ***	yes
Supplier and raw material control	n.a. ***	yes
Process validation by 3 consistency batches	n.a.	yes
Validation of all analytical methods	n.a.	yes
Validation of shelf life by accelerated and long-term testing**	no	yes**
Change control, OOS and deviation procedures	n.a. ***	yes
Regulatory support: on-site audits, change notifications, etc.	no	yes
Regulatory compliance	USP <1043> Ph. Eur. 5.2.12	USP <1043> Ph. Eur. 5.2.12 ISO 20399:2022

n.a.: not applicable, not specified, or not available

** Shelf life for preclinical grade cytokines is determined according to data generated through stress tests/accelerated studies in which the impurity profile is analyzed under forced degradation conditions. Complete long-term data for GMP grade cytokines are available 3 years after product launch.

*** All measures are applied for the TGF-β1 preclinical grade production batches. These quality attributes cannot be verified in an audit for our preclinical grade products..

Regulatory Excellence

CellGenix® GMP products are based on three major quality standards:

- **Safety** - Safe and qualified raw materials in compliance with our animal-derived component-free and serum-free policy.
- **GMP Compliance** - Manufacturing and quality control following all applicable GMP guidelines to provide documented evidence of purity, potency, consistency and stability.
- **Regulatory Compliance & Support** – GMP products are manufactured, tested, released and distributed under an ISO 9001:2015 certified Quality Management System and allow for the safe use in accordance with USP Chapter <1043>, Ph. Eur. General Chapter 5.2.12. and ISO 20399:2022. GMP cytokines are tested and released according to USP Chapter <92> as applicable.

We offer expert regulatory and technical support as well as FDA Drug Master Files for most of our products. Customized solutions can be provided to meet special compliance needs.

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Subject to change without notice

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