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Efficient purification of Lymphocytic Choriomeningitis Virus using monolithic chromatography

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Virus-based cancer immunotherapies have received increased attention in recent years. Abalos Therapeutics has generated lymphocytic choriomeningitis virus (LCMV) strains with optimized anti-tumoral properties that induce a strong and persisting innate and adaptive immune response against the cancer cells including distant metastases. The mode of action of LCMV immunomodulatory virotherapy therein differs from other novel oncolytic virus therapies. As a member of the Arenaviridae family, LCMV is a 60 - 300 nm enveloped virus with a bi-segmented genome made up of two single-stranded negative sense RNAs. Abalos Therapeutics has developed a robust upstream manufacturing and downstream purification process to enable safe and high-quality production of LCMV at different scales to support preclinical and clinical studies. This presentation covers the development of monolithic cation-exchange and hydrophobic-interaction chromatography for the purification of LCMV from clarified cell culture media. The chromatographic purification process, which has been the bottleneck during LCMV purification scale-up, was further streamlined to meet the quality and purity requirements set by regulations. Reliable analytical techniques were employed to ensure precise monitoring of the processed material. Both upstream and downstream processes have been defined and consolidated at the scale and successfully transferred to the CMO for manufacturing at the clinical scale.

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