Biosimilars have received a remarkable attention in the recent years. Due to the heterogeneity of biosimilar mAbs, they need to be well-characterized by various orthogonal techniques in order to identify their physicochemical and functional characteristics. Characterization of the post translational modifications, especially, glycosylation is vital to define the critical quality attributes (CQAs) which affect safety, efficacy and quality of drugs. In this study, we were able to manipulate the quality of the drug by using scale-up strategies for single use systems. By using ultra-performance liquid chromatography (UPLC) coupled to mass spectrometry (MS), we were able to demonstrate physicochemical similarities between innovator and its biosimilar candidate. Even the PTM (N-terminal pyroglutamic acid formation, C-terminal lysine truncation, methionine and tryptophan oxidation, asparagine deamidation, N-glycosylation and glycation) levels of two products from 3 and 200-liter single-use bioreactors were highly similar compared to the innovator. The mass spectrometry studies showed that the scale-up strategy from 3 liter to 200 liter was successful. Deconvoluted mass spectrum for intact and reduced masses (heavy and light chain) of innovator and its biosimilar candidates from different production scales were significantly similar. Oxidation was observed to be lower in 200 liter bioreactor compared to the 3 liter. The N-glycan profiles for the major and minor glycan species were highly similar compared to the originator. Aggregation level in 200 liter was slightly lower than that of the small scale production. Mass spectrometry becomes an important tool to enhance the biosimilarity to the originator in order to decrease the clinical efforts to be able to provide affordable drugs to the patients.