

Expression of a complex biosimilar monoclonal antibody in alternate mammalian host system

Hatim Motiwala

Intas Biopharmaceuticals Ltd., India

Monoclonal antibodies (Mabs) are now the second largest category of biopharmaceutical products in development and are predominantly manufactured by mammalian cells in culture. Large-scale processes generally employ Chinese Hamster Ovary (CHO) cells as production vehicles, although other mammalian cell types, such as murine lymphoid cells (NS0, SP2/0), are also utilized. Mammalian cell hosts can correctly fold, assemble, and glycosylate Mab polypeptides. The latter is crucial, for example, in the case of recombinant mAbs that are designed to harness biological activities such as antibody-dependent cell cytotoxicity and complement mediated lysis in vivo. The glycosylation and bioactivity varies from host to host. We have attempted switching the host system to express biosimilar mAb. The main purpose of switching host was to strike a balance between achieving higher productivity and quality as close to the Innovator's product as well as making a platform expression-host system to make the process economical. In order to achieve this we have selected one of the most complex mAb available in market which possess two glycosylation sites.

The oligosaccharides of mAb have micro-heterogeneity and their profile is often altered even under a defined set of culture and purification protocol. In addition to changing host system we have to distinguish the inherent property of a clone to process for a particular glycan and variants and that too in a specific ratio which is critical parameter to ensure for matching biosimilarity of mAbs.

The high end analytical tools explored and used during this would serve as a platform clone screening tool to identify the right clone at an early stage of development for any mAb project.

Biography

Hatim Motiwala is a postgraduate in Microbiology and at completion stage of Ph.D. from The M.S. University of Baroda, India. He has 12 years of experience working on biosimilars. His core expertise is in mammalian cell culture with working experience in cell line development, mammalian upstream process development, in-vitro bioassays, technology evaluation and transfer. Currently, working at a post of Senior Scientist and managing three biosimilar monoclonal antibody development programs at Intas Biopharmaceutical Limited. Earlier he was associated with Biocon Biopharmaceuticals, Cadila Pharmaceuticals, Sun Pharma Advanced Research Centre, and Chiron Vaccines Limited (Aventis).

hatimotiwala@yahoo.com