The Use of Two-Sided Tolerance Interval Testing with Considering the Variability of Batches in the Assessment of Biosimilarity

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Abstract

In recent years, with the expiration of several patents for innovative drug, the production of corresponding biosimilar products has become increasingly prevalent. However, there remains a lack of clarity regarding the statistical criteria for assessing the similarity between an innovative biologic and its biosimilar counterpart. Additionally, it is known that the between-batches variability plays a crucial role for the response of a biosimilar product, however, the involvement in the statistical analysis is seldom discussed in the literatures. In this study, we assume that the therapeutic response can be explained by a nested random effect model with the between-batches variability. A two-sided tolerance interval-based hypothesis test is constructed and the statistical properties are investigated by simulation studies with various parameter components. Finally, we use a real example to demonstrate the proposed approach.

Key Words: biosimilarity, two-sided tolerance interval, between-batches variability.