as a scientific matter, is necessary for the development of a proposed product as a biosimilar. In addition, a 351(k) application for a proposed product must contain, among other things, information demonstrating biosimilarity based on data derived from animal studies (including the assessment of toxicity) and a clinical study or studies (including the assessment of immunogenicity and pharmacokinetics or pharmacodynamics), unless the Agency determines that an element is unnecessary in a particular 351(k) application.

3.8 Clinical pharmacology data to support biosimilarity

3.8.1 Background

Clinical pharmacology studies play a critical role in the development of biosimilar products. These studies are part of a stepwise process for demonstrating biosimilarity between a proposed biosimilar product and the reference product and add to the totality of the evidence to support an overall demonstration of biosimilarity between the proposed biosimilar product and the reference product through the demonstration of no clinically meaningful differences. Data gathered from clinical pharmacology studies may also support a selective and targeted approach to the design of any necessary subsequent clinical studies to support a demonstration of biosimilarity.

In May 2014, the U.S. agency issued draft guidance for industry to assist sponsors with the design and the use of clinical pharmacology studies to support a decision that a proposed therapeutic biological product is biosimilar to its reference product. This guidance pertains to those products—such as therapeutic biological products—for which PK and PD data are required as part of a stepwise approach to developing the data and the information necessary to support a demonstration of biosimilarity. Specifically, the guidance discusses some of the overarching concepts related to the clinical pharmacology testing for biosimilar products, the approaches for developing the appropriate clinical pharmacology database, and the utility of modeling and simulation for designing clinical trials. Structurally difficult to characterize, these products have side effects like immunogenic responses and stability profiles that are difficult to predict, and structure–activity relationship ill defined, all leading to the realization that the bioequivalence of these products cannot be demonstrated by the currently used methods used for chemically-derived drugs (small molecule).

3.8.2 The role of clinical pharmacology studies

The BPCI Act, which was enacted as part of the Patient Protection and Affordable Care Act (Affordable Care Act), established an abbreviated