GaBI Educational Workshops

First MENA Educational Workshop on
SIMILAR BIOTHERAPEUTIC PRODUCTS/BIOSIMILARS

1 September 2015, Le Meridien Dubai, United Arab Emirates

Current regulatory approval standard and practice on biosimilars – UAE

Assistant Undersecretary Amin Hussain
Al Amiri, PhD

1 September 2015

GaBi
GENERICS AND BIOSIMILARS INITIATIVE
Building trust in cost-effective treatments

PPCI
Pro Pharma Communications International

وزارة الصحة

MINISTRY OF HEALTH

Public Health Policy and Licensing Sector

Standards and Practice on Biosimilars - UAE

Dr Amin Hussein Al Amiri, M.Sc, Ph.D.
Asst. Undersecretary of Public Health Policy and Licensing Sector
MOH- 2015

Biosimilars: Simple Facts

- A Biosimilar medicine Is one similar to a biological /biopharmaceutical medicine that has already been authorized (the biological/ biopharmaceutical reference medicine).
- The active substance of a biosimilar is similar to the one of biological/ biopharmaceutical reference medicine.
- Used in the same dose to treat the same disease.
- Similar biotechnology medicinal products = a new type of generic biopharmaceutical approval.
- It is similar but not identical.
- Biopharmaceuticals represent one of the fastest-growing segments of pharmaceutical industry.
- By 2020 they are expected to represent more than 50% of the market.
- Increase opportunity to healthcare services, decrease expenditures.

Biosimilars are not generics

Can we have "biogenerics"?

In THEORY–YES

In PRACTICE–may be possible where molecule is fully characterized (depends on complexity)

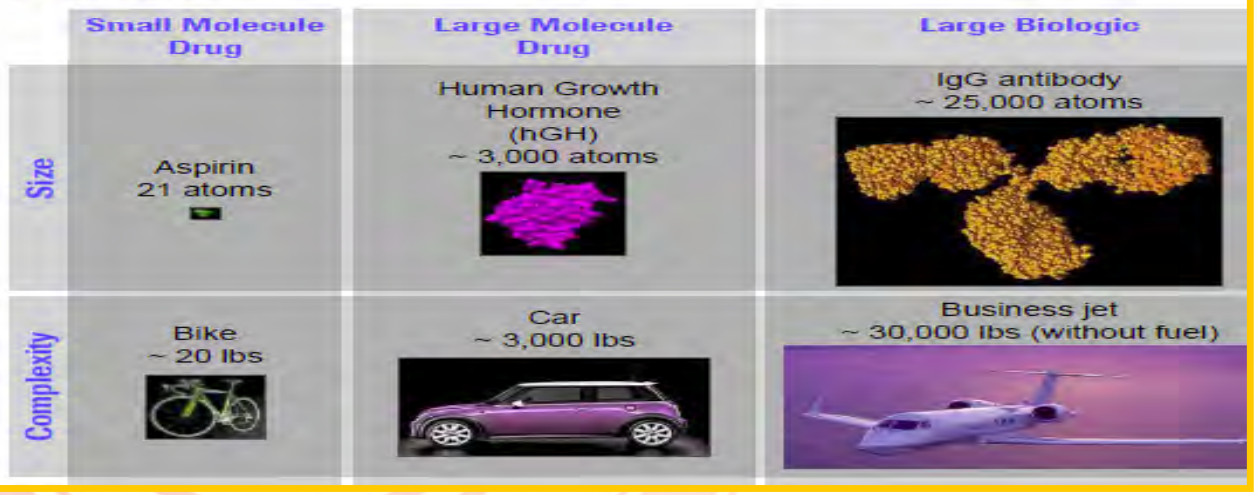
RESULT–Similar Biological Medicinal Product, Informally: "biosimilar

Biosimilars

The term 'biosimilar' describes a biological product which is similar in terms of quality, safety and efficacy to an already licensed reference biotherapeutic product

The manufacturing process of a Biological Product is a complex sequence of critical steps.
The process is the product

Size & Complexity – Small Molecule Drugs & Proteins



Any change in composition of product mixture can potentially affect patient safety and chance of cure

Some of the many factors that influence the immunogenicity of biopharmaceuticals

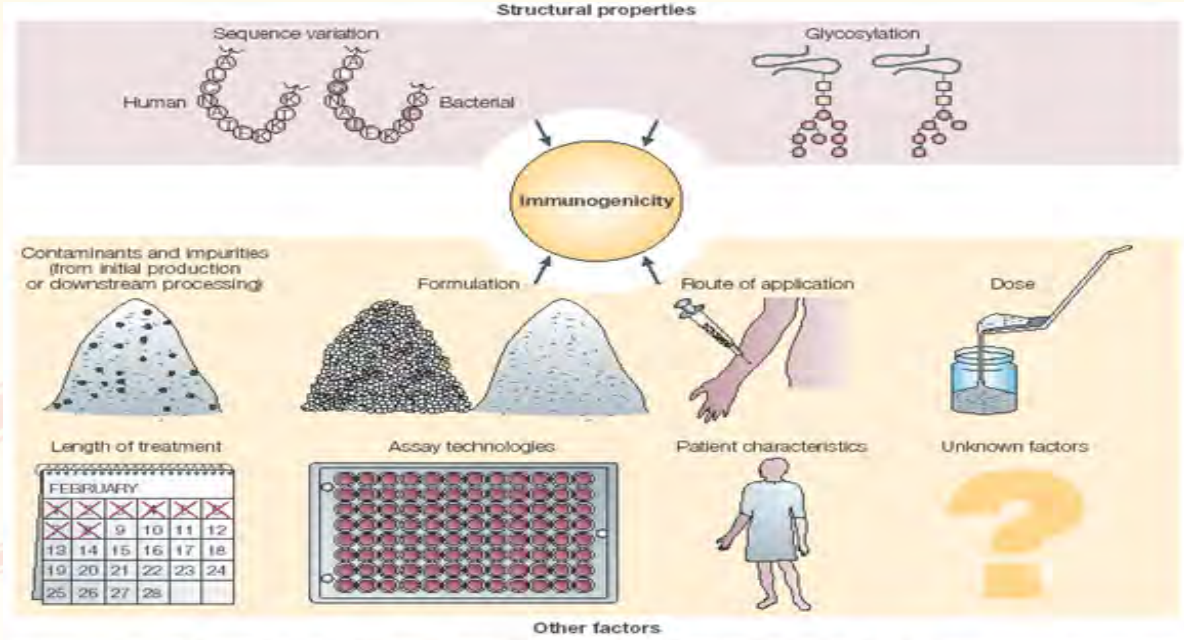


Figure 1 | **Some of the many factors that influence the immunogenicity of biopharmaceuticals.** The immunogenic potential of therapeutic proteins can be reduced by the design of the production system and downstream processing. However, some of the factors involved are still unknown.

Schellekens, H., Bioequivalence and immunogenicity of biopharmaceuticals. Nature Reviews June 2002

The challenge: to demonstrate that differences between the biosimilar and the reference medicinal product do not have a significant impact on clinical efficacy and/or safety

- Even small differences may have significant effects.
- Need to combine physicochemical results with functional assays

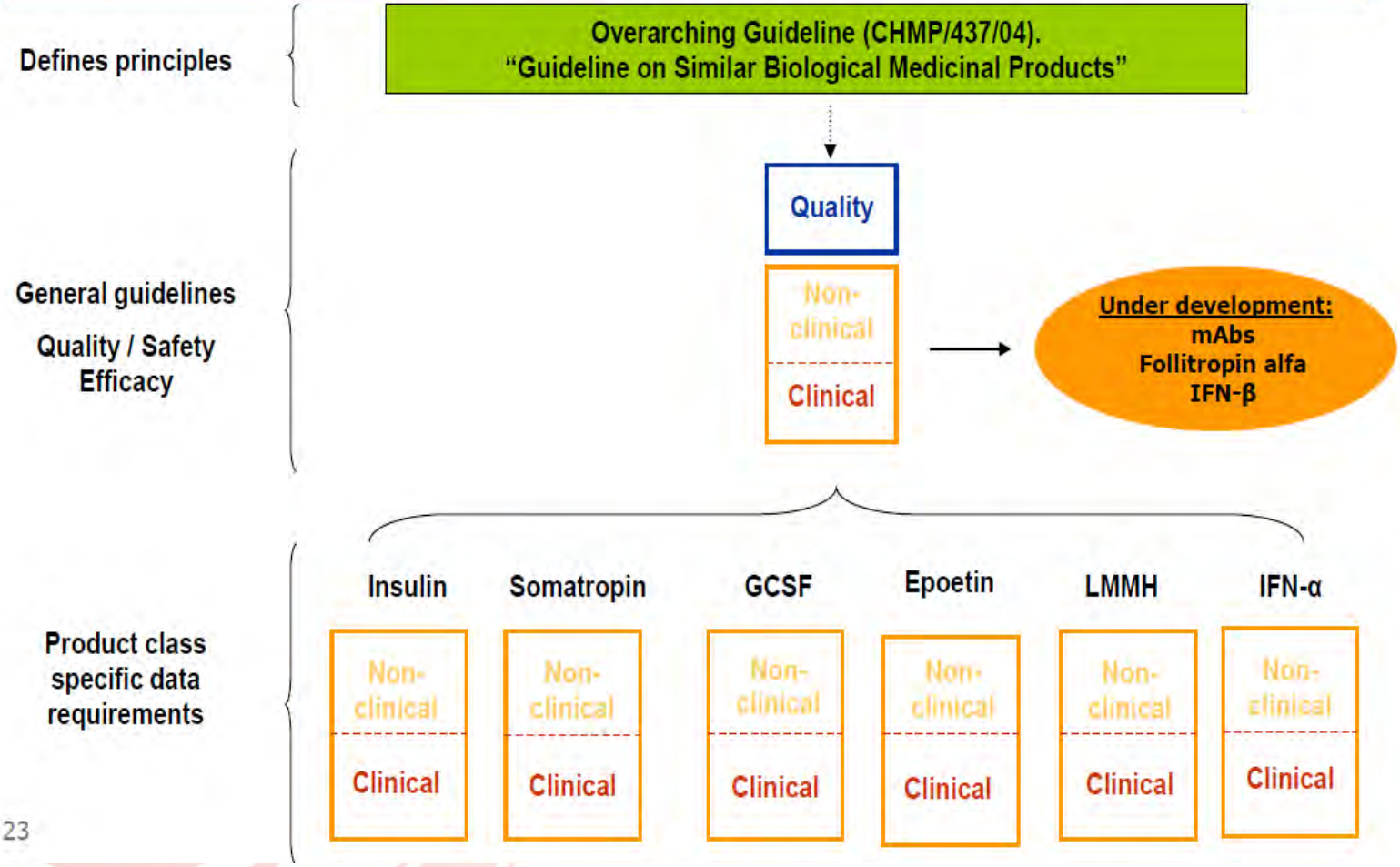
Biosimilars: How Similar are They?

- Regulators are faced with the challenge of defining therapeutic equivalence of biosimilar products
- Market approval process for traditional pharmaceutical products CAN NOT be applied to second-entry biosimilars
- Analytical methods are inadequate to fully characterize these complex proteins

Driving Forces for Emerging Biosimilars

- The patents of several biopharmaceuticals have expired, or are about to expire
- The potential market of biopharmaceuticals is very large
- Pressure to reduce healthcare expenditure and increase patient access to treatment will drive the development of cheaper biosimilars

Guidelines for biosimilars



Examples of Biosimilar Guidelines

- COMMITTEE FOR MEDICINAL PRODUCTS FOR HUMAN USE (CHMP):European Medicines Agency Evaluation of Medicines for Human Use (EMA): GUIDELINE ON SIMILAR BIOLOGICAL MEDICINAL PRODUCTS- ICH
- Health Canada (finalized Guidance on Subsequent Entry Biologics published in 2010)
- Japan (Guideline on quality, safety and efficacy of follow-on biologics was published in 2009)
- WHO (Guidelines on Evaluation of Similar Biotherapeutic Products adopted in 2009)
- FDA (Abbreviated approval pathway for Biosimilars created via the Patient Protection and Affordable Care Act, signed on 2010)
- CHMP guidance also adopted by, e.g.:
  - Australia
  - Malaysia

REQUIREMENTS TO BE FULFILLED FOR REGISTRATION OF BIOSIMILAR PRODUCTS IN **UAE**

REGULATORY FRAMEWORK

A company may choose to develop a new biological medicinal product claimed to be "similar" to a reference medicinal product, which has been granted a marketing authorization in the Community on the basis of a complete dossier in accordance with the provisions of the requirements for the Marketing Authorization.

Comparability studies are needed to generate evidence substantiating the similar nature, in terms of quality, safety and efficacy, of the new similar biological medicinal product and the chosen reference medicinal product authorized.

1. Data on consistency in the manufacturing process:
   a. Full description of the manufacturing process
   b. QC tests and specifications with supporting data as evidence of adequate control of the manufacturing process
   c. Data on consistency overtime for one year of full production.

REQUIREMENTS TO BE FULFILLED FOR REGISTRATION OF BIOSIMILAR PRODUCTS IN **UAE** (cont.)

2. Heterogeneity assessment:

a. Comparability data between the test product and the original product:

i. Demonstration and conclusion that the 2 products are highly similar before and after the manufacturing changes and that no adverse impact on quality, safety or efficacy of the product occurred.

ii. Bioactivity and potency essays as well as surrogate clinical endpoint must be demonstrated

b. Similarity assessment of the finished products:

i. Includes all applicable clinical and pre-clinical data for the finished products in order to fully assess the impact of differences in the process and products on quality, safety and efficacy.

REQUIREMENTS TO BE FULFILLED FOR REGISTRATION OF BIOSIMILAR PRODUCTS IN **UAE** (cont.)

3. Therapeutic equivalence:

a. Pharmaceutical equivalence studies:

i. Identical active drug ingredients

ii. Identical amounts of active ingredients

iii. Identical dosage forms

iv. Identical compendial or other applicable standards of identity, strength, quality and purity.

b. Bioequivalence studies:

i. To be considered bioequivalent, the bioavailability of two products must not differ significantly when the two products are given in studies at the same dosage under similar conditions

REQUIREMENTS TO BE FULFILLED FOR REGISTRATION OF BIOSIMILAR PRODUCTS IN **UAE** (cont.)

4. Safety and efficacy studies:
   a. Through clinical studies
   b. Post-marketing surveillance

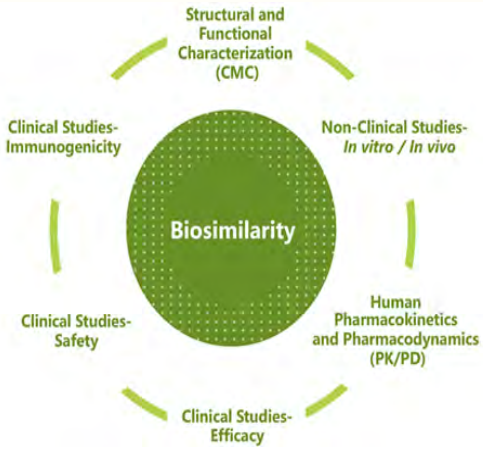
5. Demonstration of immunogenicity:
   a. Demonstration of the comparative data of immunogenicity between the 2 products is required evidenced by comparative clinical trials
   b. Clinical trial must demonstrate:
      i. Purity of the product
      ii. Epitope analysis
      iii. Animal experiments (conventional animals/relative immunogenicity, non-human primates, immune-tolerant transgenic mice)

6. Pharmacovigilance Plan:
   a. Track and trace
   b. Recall plan
   c. Plan for ADR (Adverse Reaction Report)
   d. Bar coding method
   e. Post approval stability protocol and stability commitments
   f. Plan of Quality (defect, final formulation package)

UAE Biosimilar Licensing Procedures

- Overseas Biosimilar Products:
  - Follow international guidelines according to the drug manufacturers and approval from international authorities (e.g. FDA, EMA, etc.)
- National Biosimilar Products
  - Follow UAE standards/GCC Guidelines (i.e. Insulin)
- Any Change in the product's specifications or characteristics is considered as a New product and will

  Follow Biosimilarity procedures



THANK YOU