Good Laboratory Practices

BY

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Good Laboratory Practice

- Good Laboratory Practice is a quality system concerned with the organizational process and the conditions under which a study is planned, performed, monitored, recorded, archived and reported.

GOOD LABORATORY PRACTICE

- GLP applies to **nonclinical studies** conducted for the assessment of the **safety or efficacy** of chemicals (including pharmaceuticals).

- GLP helps assure regulatory authorities that the data submitted are a true.

HISTORY

- The formal regulatory concept of "Good Laboratory Practice" (GLP) originated in the USA in the **1970's.**

- The FDA's publication of Proposed Regulations on GLP in 1976, with establishment of the Final Rule in June **1979 (21 CFR 58).**

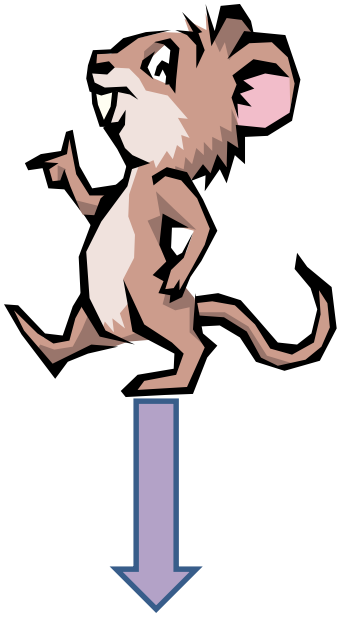
- In **1981** an organization named OECD produced GLP principles that are international standard.

WHY WAS GLP CREATED?

- In the early 70's FDA became aware of cases of (**PLP**) poor laboratory practice all over the United States.
- FDA decided to do an in-depth investigation in **40 toxicology** labs.
- They discovered a lot fraudulent activities and a lot of poor lab practices.

  Examples of some of these (**PLP**) poor lab practices found were

  - Equipment not been calibrated to standard form , therefore giving wrong measurements.
  - Incorrect/inaccurate accounts of the actual lab study
  - Inadequate plan



FAMOUS EXAMPLE

- One of the labs that went under such an investigation made headline news.
- The name of the Lab was **Industrial Bio Test.** This was a big lab that ran tests for big companies such as Procter and Gamble.
- It was discovered that mice that they had used to test lotion and deodorants had developed cancer and died

■ Industrial Bio Test lab threw the dead mice and covered results deeming the products good for human use.

■Those involved in production, distribution and sales for the IBT lab eventually served jail time.

Why GLP?

- Development of quality test data
- Mutual acceptance of data
- Avoid duplication of data
- Avoid technical barriers to trade
- Protection of human health and the environment

Scope

- Non-clinical safety testing of test items contained in
  - Pharmaceutical products
  - Pesticide products
  - Cosmetic products
  - Veterinary drugs
  - Food and feed additives
  - Industrial chemicals

OBJECTIVES OF GLP

- GLP makes sure that the data submitted are a true reflection of the results that are obtained during the study.
- GLP also makes sure that data is traceable.
- Promotes international acceptance of tests.

MISSION OF GLP

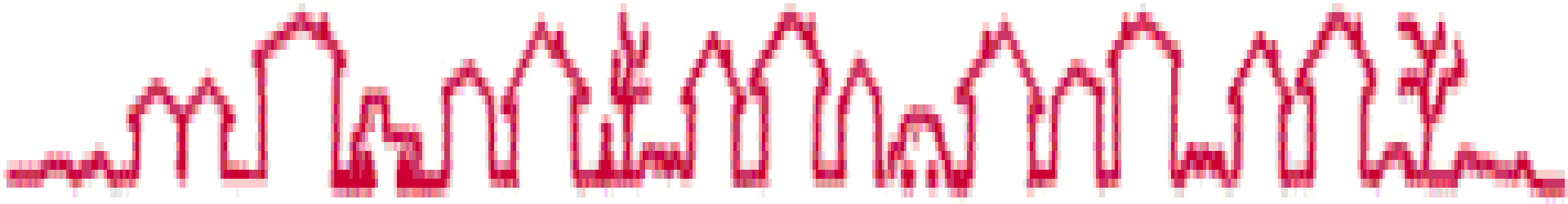
- Test systems
- Archiving of records .
- Apparatus, material and reagent facilities.
- Quality assurance programs.
- Performance of the study.
- Reporting of study results.
- Standard operating procedures (SOP)

The GLP Principles

1. Test facility organization and personnel
2. Quality Assurance (QA) program
3. Facilities
4. Apparatus materials and reagents
5. Test systems
6. Test and reference items
7. Standard Operating Procedures (SOP's)
8. Performance of the study
9. Reporting of study results
10. Storage and retention of records and materials

1. Test Facility Organization and Personnel

- Test facility management's responsibilities
- Study director's responsibilities
- Principal investigator's responsibilities
- Study personnel's responsibilities



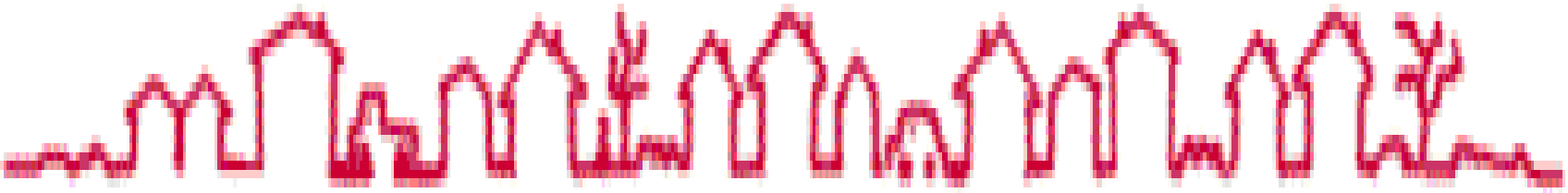
2. Quality Assurance Program

Responsibilities of the QA Personnel

- Designated individuals as members of the QA team directly responsible to the management
- QA members not to be involved in the conduct of the study being assured
- Access to the updated study plans and SOP's
- Documented verification of the compliance of study plan to the GLP principals
- Inspections to determine compliance of the study with GLP principles. Three types of inspection
  - Study-based inspections
  - Facility-based inspections
  - Process-based inspections

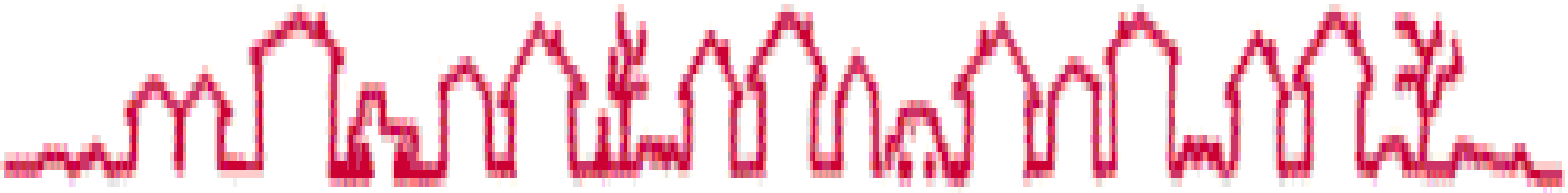
3. Facilities

- Suitable size, construction and location
- Adequate degree of separation of the different activities
- Isolation of test systems and individual projects to protect from biological hazards
- Suitable rooms for the diagnosis, treatment and control of diseases
- Storage rooms for supplies and equipment



3. Facilities

- Separate areas for receipts and storage of the test and reference items
- Separation of test items from test systems
- Archive facilities for easy retrieval of study plans, raw data, final reports, samples of test items and specimen
- Handling and disposal of waste in such a way not to jeopardize the integrity of the study



4. Apparatus, Materials and Reagents

- Apparatus of appropriate design and adequate capacity
- documented Inspection, cleaning, maintenance and calibration of apparatus. Calibration to be traceable to national or international standards
- Apparatus and materials not to interfere with the test systems
- Chemicals, reagent and solutions should be labeled to indicate identity, expiry and specific storage instructions.

5. Test Systems

- Physical and chemical test systems
  - Appropriate design and adequate capacity of apparatus used for the generation of data
  - Integrity of physical/chemical test systems
- Biological test systems
  - Proper conditions for storage, housing, handling and care
  - Isolation of newly received animal and plant test systems until health status is evaluated
  - Humanely destruction of inappropriate test systems

5. Test Systems

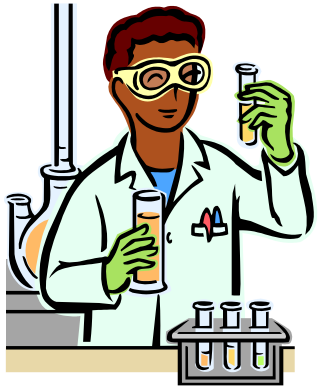
- Records of source, date of arrival, and arrival conditions of test systems
- Acclimatization of biological systems to the test environment
- Proper identification of test systems in their housing or container or when removed
- Cleaning and sanitization of housings or containers
- Pest control agents to be documented
- Avoid interference from past usage of pesticides

6. Test and Reference Items

- Receipt, handling, sampling and storage
  - Records for date of receipt, expiry date, quantities received and used in studies etc
  - Handling, sampling and storage procedures to ensure homogeneity and stability and avoid contamination or mix-up
  - Identification information on storage containers

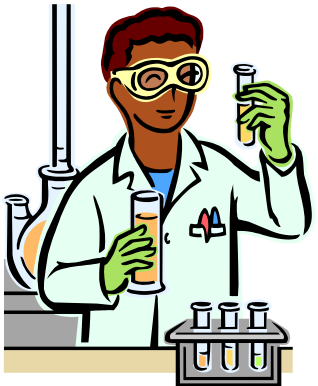
6. Test and Reference Items

- Characterization
  - Identification of each test and reference item
    - Code,CAS number,name etc
  - Identification of each batch of the test or reference items
    - Batch number, purity, composition, concentration etc
  - Cooperation between the sponsor and the test facility
    - Verification of identity of the test item



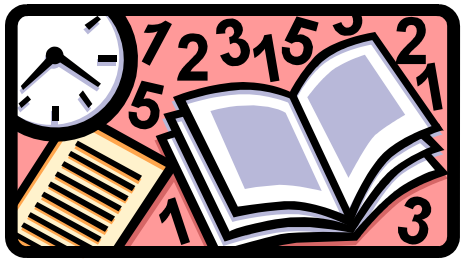
6. Test and Reference Items

- Known stability of test and reference items
- Stability of the test item in its vehicle (container)
- Experiments to determine stability in tank mixers used in the field studies
- Samples for analytical purposes for each batch



7. Standard Operating Procedures

- Approved SOP's to ensure the quality and integrity of the laboratory data
- Immediately available current SOP's relevant to the activities being performed
- Deviations from SOP's to be acknowledged by the study director



7. Standard Operating Procedures

- SOP's for
  - Test and reference items
    - Receipt, identification, labeling,handling, sampling, storage
  - Apparatus
    - Use, maintenance, cleaning, calibration
  - Computerized systems
    - Validation, operation, maintenance security, change control, back-up
  - Materials, reagents and solutions
    - Preparation and labeling

7. Standard Operating Procedures

- Record keeping, reporting, storage and retrieval
  - Coding system, data collection, preparation of reports, indexing system, handling of data
- Test system
  - Room preparation, environmental room conditions, receipt, transfer, identification etc, test system preparation, observations etc,
- Quality Assurance Procedures
  - Operation of QA personnel

8. Performance of the Study

- Study plan
  - Written plan, verified for GLP compliance, approved by the study director and by the management
  - Approval of amendments by dated signatures
  - Deviations to be explained and acknowledged

8. Performance of the Study

- Content of the study plan
  - Identification of the study
    - Title, nature and purpose of the study, test item identity, reference item used etc
  - Information concerning the sponsor and facility
    - Names and address (sponsor, test facility, study director)
  - Dates
    - Approval dates of the study plan, estimated starting and completion dates etc
  - Reference to test methods
  - Records

8. Performance of the Study

- Conduct of the study
  - Identification of each study
  - The study to be conducted in accordance with the study plan
  - Data generated to be recorded directly and accurately
  - Changes in the raw data not to obscure the previous data
  - Identification of electronic data

9. Reporting of Study Results

- General
  - Final report for each study
  - Scientists to sign and date their reports
  - Approval by the Study Director
  - Corrections, additions, amendments to be signed and dated by the study director
- Content of the final report
  - Identification of the study
    - Descriptive title, identification of the test and reference item, purity, stability.

9. Reporting of Study Results

- Information on sponsor and test facility
  - Name and addresses of the sponsor, test facility, study director, the scientists involved to the study etc)
- Experimental starting and completion dates
- A Quality Assurance Program Statement
- Description of materials and test methods
- Results
  - Including uncertainties, level of significance
  - Evaluation discussion and conclusions
- Storage (of samples, reference items, raw data, final reports etc

10. Storage and Retention of Records and Materials

- What to retain in archives
  - The study plan, raw data, samples
  - Inspection data and master schedules
  - Qualification, training experience, job description
  - Maintenance and calibration data
  - Validation data
  - SOPs
  - Environmental, health & safety monitoring records

10. Storage and Retention of Records and Materials

- Retention period to be defined
- If any study material is disposed of before expiry the reason to be justified and documented
- Index of materials retained in the archives
- Controlled access to the archives
- In case that the laboratory goes out of business the archives are transferred to the relevant sponsors(s)

What is GCP ?

Good Clinical Practice (GCP) is defined as a 'standard for the design, conduct, performance, monitoring, auditing, recording, analyses and reporting of clinical trials that provides assurance that the data and reported results are credible and accurate, and that the rights, integrity and confidentiality of trial subjects are protected

What is GMP

- Good manufacturing practice is the part of quality assurance which ensures that products are consistently produced and controlled to the quality standard appropriate to their intended use and as required by the Marketing Authorization or product specification. GMP is concerned with both production and quality control

GMP

- **GMP is the manufacture of the drug or device**
- Have a Quality System in place and follow procedures. Maintain control of manufacturing processes.
- Capture and review complaints, deviations, CAPA, root cause, audits, change control and effectiveness check for anyone who has a hand in the manufacture of the final product or any component
- Roles and Training
- **Manufacturing Facility** Owned by the head of production, executed by plant quality manager
- **Key terms:**
- Quality Management System
- Batch Release
- Manufacturing Authorization

Ten Principles of GMP

1. Design and construct the facilities and equipments properly
2. Follow written procedures and Instructions
3. Document work
4. Validate work
5. Monitor facilities and equipment
6. Write step by step operating procedures and work on instructions
7. Design ,develop and demonstrate job competence
8. Protect against contamination
9. Control components and product related processes
10. Conduct planned and periodic audits

GMP Categories

- Sale
- Premises
- Equipment
- Personnel Sanitation
- Raw Material Testing
- Manufacturing Control
- Packaging Material Testing
- Finished Product Testing
- Quality Control Department
- Records
- Samples
- Stability
- Sterile Products

Why GMP is important

- A poor quality medicine may contain toxic substances that have been unintentionally added.
- A medicine that contains little or none of the claimed ingredient will not have the intended therapeutic effect.
- GMP in solid dosage forms
- GMP in semisolid dosage forms
- GMP in Liquid orals
- GMP in Parenterals Production
- GMP in Ayurvedic medicines
- GMP in Bio technological products
- GMP in Nutraceuticals and cosmeceuticals
- GMP in Homeopathic medicines

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THANK YOU