Good Manufacturing Practices for ASU Medicines.

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SCHEDULE - T

- Schedule-T was inserted by GSR 561(E), dt.23-6-2000 and substituted by GSR 198(E) dt.7-3-2003. Sch.T is meant for Good Manufacturing Practices for ASU Medicine.

The Good Manufacturing Practices are prescribed to ensure that:

- 1) Raw materials used in the manufacture of drugs are authentic, of prescribed quality and are free from contamination.
- 2) The manufacturing process is as has been prescribed to maintain the standards.
- 3) Adequate quality control measures are adopted.
- 4) The manufactured drug which is released for sale is of acceptable quality.

- 5) To achieve the objective listed above, each licensee shall evolve methodology and procedures for following the prescribed process of manufacturer of drugs which should be documented as a manual and kept for reference and inspection. However teaching institutions and registered qualified Vaidyas, Siddha and Hakeems who prepare medicines on their own to dispense to their patients and not selling such drugs in the market are exempted from the purview of G.M.P.

Good Manufacturing Practices

- Factory Premises:
- The manufacturing plant should have adequate space for :-
- 1) Receiving and storing raw material
- 2) Manufacturing process areas
- 3) Quality control section
- 4) Finished goods store
- 5) Office
- 6) Rejected goods/drugs store

1.1 General Requirements:
1.1(A) Location and Surroundings:

The factory building: for manufacture of ASU medicines shall be so situated and shall have such constructions as to avoid contamination from open sewerage, drain, public lavatory or any factory which produces disagreeable or obnoxious odour or fumes or excessive soot, dust or smoke.

1.1(B) Buildings.-

- The building used for factory shall be such as to permit production of drugs under hygienic conditions and should be free from cobwebs and insects/rodents. It should have adequate provision of light and ventilation. The floor and the walls should not be damp or moist. The premises used for manufacturing, processing, packaging and labeling will be in conformity with the provisions of the Factory Act. It shall be located so as to be:

- 1) Compatible with other manufacturing operations that may be carried out in the same or adjacent premises.
- 2) Adequately provided with working space to allow orderly and logical placement of equipment and materials to avoid the risk of mix up between different drugs or components thereof and avoid the risk of omission of any manufacturing or control step.

- 3) Designed, constructed and maintained to prevent entry of insects and rodents. Interior surface(walls, floors and ceilings) shall be smooth and free from cracks and permit easy cleaning and disinfection. The walls of the room in which the manufacturing operations are carried out shall be impervious to and be capable of being kept clean. The flooring shall be smooth and even and shall be such as not to permit retention or accumulation of dust or waste products.

- 4) Provide with proper drainage system in the processing area. The sanitary fitting and electrical fixtures in the manufacturing area shall be proper and safe.
- 5) Furnace Bhatti section could be covered with tin roof and proper ventilation, but sufficient care should be taken to prevent flies and dust.
- 6) There should be fire safety measures and proper exits should be there.

1.1(C) Water Supply.-

- The water used in manufacture shall be pure and of potable quality. Adequate provision of water for washing the premises shall be made.

1.1(D) Disposal of Waste.-

- From the manufacturing sections and laboratories the waste water and the residues which might be prejudicial to the workers or public health shall be disposed off after suitable treatment as per guidelines of pollution control authorities to render them harmless.

1.1(E) Container's Cleaning.-

- In factories where operations involving the use of containers such as bottles, vials and jars are conducted, there shall be adequate arrangements separated from the manufacturing operations for washing, cleaning and drying of such containers.

1.1(F) Stores.-

- Storage should have proper ventilation and shall be free from dampness. It should provide independent adequate space for storage of different types of material, such as raw material, packaging material and finished products.

1.1(F)(A) Raw Materials.-

- All raw materials procured for manufacturing will be stored in the raw materials store. The manufacture based on the experience and the characteristics of the particular raw material used in ASU system shall decide the use of appropriate containers which would protect the quality of the raw material as well as prevent it from damage due to dampness, microbiological contamination or rodent and insect infestation, etc. If certain raw materials require such controlled environmental conditions, the raw materials stores may be sub-divide with proper enclosures to provide such conditions by suitable cabinization. Contnd.

- While designing such containers, cabins or areas in the raw materials store, care may be taken to handle the following different categories of raw materials:-
- 1) Raw material of metallic origin.
- 2) Raw material of mineral origin.
- 3) Raw material of animal source.
- 4) Fresh Herbs.
- 5) Dry Herbs or plant parts.
- 6) Excipients etc.
- 7) Volatile oils/perfumes & flavors.
- 8) Plant extracts and exudates/resins.

- Each container used for raw material storage shall be properly identified with the label which indicates name of the raw material, source of supply and will also clearly state the status of raw material such as ‘Under Test’ or ‘Approved’ or ‘Rejected’ The labels shall further indicate the identity of the particular supply in the form of Batch no. or Lot no. and the date of receipt of the consignment.

- All the raw materials shall be sampled and got tested either by the in-house ASU experts (QC technical person) or by the laboratories approved by the Government and shall be used only on approval after verifying. The rejected raw material should be removed from other raw material store and should be kept in a separate room. Procedure of ‘First in first out’ should be adopted for raw materials wherever necessary. Records of the receipt, testing and approval or rejection and use of raw material shall be maintained.

1.1(F)(B) Packaging Materials.-

- All containers and closure shall be adequately cleaned and dried before packing the products.
- The Record regarding use of packing material should be properly maintain.

1.1(F)(C) Finished Goods Stores.-

- The finished goods should be tested before storage in approved finished product store.
- The Rejected finished product should be stored separately and securely.
- The finished goods should be stored at proper temperature and proper Humidity.
- The Record of Distribution should be maintained.

1.1(G) Working space.-

- The working space should be properly maintained so as to man can work properly and intermixing of other Products should be avoided.

1.1(H) Health Clothing, Sanitation and Hygiene of Workers.-

- At the time of employment all workers should be medically examined. They are free from contagious diseases.
- They should be provided with apron, hand glows, foot wares, masks and caps.
- Separate facility of Toilet and Change Room for Men and Women are to be provided.

1.1(I) Medical Services.-

- First Aid Box should be provided.
- Medical examination of workers at the time of entrance and once in a year should be carryout and Record should be maintained.

1.1(J) Equipments.-

- All required machineries and equipments as per List of Part II A should be provided.
- The SOPs of all equipments and machinery should be maintained.
- All SOPs regarding processes involved in manufacturing should be also maintained.

1.1(K) Batch Manufacturing Records.-

- List of Raw material and their quantities
- Tests conducted during the various stages of manufacture like taste, color, physical characteristics and chemical tests as may be necessary or indicated in the approved books of ASU mentioned in the First Schedule of the D&C Act,1940.
- These tests may include any in-house or pharmacopoeial test adopted by the manufacturer in the raw material or in the process material and in the finished product.

- These records shall be duly signed by production and Quality Control Personnel respectively.
- Details of manufactured drug to the finished products store including dates and quantity of drugs transferred along with record of testing of the finished product, if any, and packaging, records shall be maintained.
- It should be essential to maintain the record of date, manpower, machine and equipments used and to keep in process record of various shodhana, Bhavana, burning in fire and specific grindings in terms of internal use.

1.1(L) Distribution Records.-

- Distribution and sales record of the product should be properly maintained so as to recall of product can be done fastly whenever required.
- The Record should be maintained for 5 years of the exhausting of stock.

1.1(M) Record of Market Complaints.-

- The Record of market complain should be maintained.
- The complain should be investigated properly and corrective actions should be taken.
- The record of adverse reaction occurred due to product should be maintained and investigation should be carried out properly.

1.1(N) Quality Control.-

- The Licensee have its own Quality control department or they can testing their products with Government approved Public testing laboratories for testing of Raw material and Finished products.
- The Q.C. has 150 sq.ft. area.
- For identification of Raw drugs, Reference books and reference samples should be maintained.
- Manufacturing Records should be maintained.
- Retain Sample of products should be maintained till the expiry date of the product.
- The Method of analysis and SOP should be maintained properly.

- To supervise and monitor adequacy of conditions under which raw materials, semi finished products and finished products are stored.
- Keep record in establishing shelf life and storage requirements for the drugs.
- Mfger who are mfging patent proprietary ASU medicines shall provide their own specification and control reference in respect of such formulated drugs.
- The record of specific method and procedure of preparation, that is, ‘Bhavna’, Mardana, and puta and the record of every process carried out by the mfger shall be maintained.

- The standards of identity, purity and strength as given in respective pharmacopoeias of ASU systems of medicines published by GOI shall be complied with.
- All raw materials will be monitored for fungal, bacterial contamination with a view to minimize such contamination.

- The Q.C. will have a minimum of :
- 1) Expert in ASU Medicines who hold Qualifications as per Schedule-II of IMCC Act, 1970.
- 2) Chemist who has degree of BSC Or Pharmacy (Ayurvedic) or Pharmacy of Recognized University.
- 3) Botanists who has degree of BSC(Medical) Or Pharmacy (Ayurvedic) or Pharmacy of Recognized University.

Requirement for Sterile Product:

- A) Manufacturing Area for sterile product should be provided with the Airlock. The Air coming in the area should be filtered with HEPA filters.
- The positive pressure should be maintained in manufacturing area.
- The plate count should be carried out for manufacturing area.
- The minimum assess of personal should be observed strictly and SOP should be maintained properly.
- Records should be maintained properly.

- B) Precautions against contamination and mix:-
- a) Carrying out manufacturing operations in a separate block of adequately isolated building or operating in an isolated enclosure within the building.
- b) Using appropriate pressure differential in the process area.
- c) Providing a suitable exhaust system.
- d) Designing laminar flow sterile air systems for sterile products.

- e) The germicidal efficiency of UV lamps shall be checked and recorded indicating the burning hours or checked using intensity.
- F) Individual containers of liquids and ophthalmic solutions shall be examined against black-white backgrounds fitted with diffused light after filling to ensure freedom from contamination with foreign suspended matter. Contnd.

- g) Expert technical staff approved by the Licensing Authority shall check and compare actual yield against theoretical yield before final distribution of the batch.

All process controls as required under master formula including room temperature, relative humidity, volume filled, leakage and clarity shall be checked and recorded.

PART-II & III

- A. List of Machinery, Equipment and Minimum Manufacturing Premises required for the Manufacture of various Categories of Ayurvedic, Siddha and Unani System of Medicines

- 1200 sq. ft covered area with separate cabins or partitions for each activity. If Unani medicines are manufactured in it premises an additional area of 400sq. Ft. will be required.

CATEGORY OF MEDICINE	MINIMUM SPACE REQUIRED	MACHINARY/EQUIPMENT REQUIRED
ANJANA / PISTI	100 SQ.FT	KAREL/MECHANIZED/MOTARIZED KHAREL, END RUNNER/BALL MILL, SIEVES/SHIFTER
CHURNA/NASYA, MANJAN/LEPA, KWATH/CHURN	2OO SQ.FT	GRINDER/DISINTEGRATOR/PULVERISER/POWDER MIXER/SIEVES/SHIFTER
PILLS/VATTI/GUTIKA MATRICA & TABLET	100 SQ. FT	BALL MILL, MASS MIXER, POWDER MIXER, GRANULATOR, DRIER, TABLET COMPRESSING MACHINE, PILLS/VATI CUTTING MACHINE, STAINLESS STEEL TRAYS/CONTAINER FOR STORAGE & SUGAR COATING POLISHING PAN IN CASE OF SUGAR COATED TABLET
KAPI PAKAVA/KSARA/PARPATI/LAVANA BHASMA SATVA/SINDURA KARPU/UPPU/PARAM	150 SQ.FT.	BHATTI, KARAHI/ S.S. VESSELS/ PATILA FLASK, MULTANI MATTI / PLASTER OF PARIS, COPPER ROD, EARTHER CONTAINER, GUJ PUT BHATTI, MUFFLE FURNACE, EDGE RUNNER, EXHAUST FAN, WOODEN/ S.S. SPATULA

KAJAL	100 SQ.FT.	EARTHERN LAMPS FOR COLLECTION OF KAJAL, TIPAL ROLLER MILL, END ROLLER, SIEVES, S.S. PATILA, FILLING/PACKING & MANUFACTURING ROOM SHOULD BE PROVIDED WITH EXHAUST FAN & ULTRA VIOLET LAMPS.
CAPSULE	100 SQ.FT.	AIR CONDITIONER, DE HUMIDIFIER, HYGROMETER, THERMOMETER, CAPSULE FILLING MACHINE & CHEMICAL BALANCE
OINTMENT/MARHAM/PASAI	100 SQ.FT.	TUBE FILLING MACHINE, CRIMPING MACHINE/ OINTMENT MIXER, END RUNNER/MILL, S.S. STORAGE CONTAINER
PAK/AVALESH/KHAND/MODAK/ LAKAYAM	100 SQ.FT.	BHATTI SECTION FITTED WITH EXHAUST FAN AND SHOULD BE FLY PROOF, IRON KADAHI/ S.S. PATILA AND S.S. STORAGE CONTAINER
PANAK/SYRUP/PRAVAHI KWATH MANAPAKA	150 SQ.FT.	TINCTURE PRESS, EXHASUT FAN FITTED AND FLY PROOF, BHATTI SECTION, BOTTLE WASHING MACHINE, FILTER PRESS/GRAVITY FILTER , LIQUID MACHINE, P.P CAPPING MACHINE
ASAVA/ARISHTA	200 SQ.FT.	SAME AS MENTIONED ABOVE. FERMENTATION TANKS, CONTAINERS & DISTILLATION WHERE NECESSARY, FILTER PRESS
SURA	100 SQ.FT.	SAME AS MENTIONED ABOVE PLUS DISTILLATION PLANT & TRANSFER PUMP

ARK/TINIR	100 SQ.FT.	MACERATION TANK, DISTILLATION PLANT, LIQUID FILLING TANK WITH TAP/ GRAVITY FILTER/ FILTER PRESS, VISUAL INSPECTION BOX
TAIL/ GHRIT NEY	100 SQ. FT.	BHATTI, KADAHI/S.S.PATILA, S.S. STORAGE CONTAINERS, FILTERATION EQUIPMENTS, FILLING TANK WITH TAP/ LIQUID FILLING MACHINE
ASCHYATAN/ NETRA MALHAM PANIR	100 SQ. FT.	HOT AIR OVEN ELCECTRICALLY HEATED WITH THERMOSTATIC CONTOL, KETTLE GAS OR ELECTRICALLY HEATED WITH SUITABLE MIXING ARRANGEMENT COLLATION MILL OR OINTMENT MILL, TUBE FILLING EQUIPMENT MIXING AND STORAGE TANKS OF S.S. OR OF OTHER SUITABLE MATERIAL, SINTERED GLASS FUNNEL, SEITZ FILTER OR FILTER CANDLE, LIQUID FILLING EQUIPMENT, AUTO CLAVE

LIST OF EQUIPMENTS RECOMMENDED FOR IN HOUSE QUALITY CONTROL SECTION

CHEMICAL SECTION	
ALCOHOL DETERMINATION APPRATUS	VOLATIL OIL DETERMINATION APPRATUS
BOILING POINT DETERMINATION APPRATUS	MELTION POINT DETERMINATION APPRATUS
REFRACTOMETER	POLARIMETER
VISCOMETER	TABLET DISINTEGRATION APPRATUS
MOISTURE METER	MAFFLE FURNACE
ELECTRONIC BALANCE	MAGNETIC STIRR
HOT AIR OVEN	REFRIGERATOR
GLASS/STEEL DISTILLATION APPRATUS	LPG GAS CYLINDER WITH BURNERS
WATER BATH (TEMPERATURE CONTROLLED)	HEATING MANTLES/HOT PLATES
TLC APPRATUS WITH ALL ACCESSORIES	PAPER CHROMATOGRAPY APPRATUS WITH ACCESSORIES
SIEVE SIZE 10 TO 120 WITH SIEVE SHAKER	CENTRIFUGE
DEHUMIDIFIER	PH METER
LIMIT TEST APPRATUS	

PHARMACOGNOSY SECTION

- MICROSCOPE BINOCULAR
- DISSECTING MICROSCOPE
- MICROTOME
- PHYSICAL BALANCE
- ALLUMINIUM SLIDE TRAYS
- STAGE MICROMETER
- CAMERA LUCIDA (PRISM & MIRROR TYPES)
- CHEMICALS, GLASS WARES ETC.

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