

**DOCUMENT CODE: 8.1.8**

**Availability and usage of facilities.**

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**Table 8.1.8 a: Machine Room Details**

<b>Sr. No</b>	<b>Name of equipment</b>	<b>SOP number</b>	<b>Make</b>	<b>Model</b>	<b>Availability of Log Book (Yes/No)</b>	<b>Safety measures</b>
1	Erweka main drive	MR 001-00	Inweka	IV MD Sr.No 401104.0811	Yes	Availability of electric earthing, Fire-hydrant system, Exhaust fan, UPS back up, Multi circuit breaker , Students wearing cap/apron, Glass
2	Universal gearing	MR 002-00	Inweka	Model-Universal Gear, Sr.No. 402107.0811	Yes	
3	Erweka dry granulator	MR 003-00	Inweka	Model-Dry Granulator, Sr. No .420109.0811		
4	Erweka wet granulator	MR 004-00	Inweka	Model Wet Granulator, Sr. No . 419108.0811	Yes	
5	Erweka planetary mixer	MR 005-00	Inweka	Model- Planetary Mixer, Sr.No .	Yes	

				404111.0811		shutters are provided as a safety measures during handling of compression machine
6	Erweka ball mill	MR 006-00	Inweka	Model- Ball Mill, Sr.No . 428112.0811	Yes	
7	Erweka double cone mixer	MR 007-00	Inweka	Model- Double cone Mixer, Sr.No . 411110.0811	Yes	
8	Erweka Homogenizer	MR 008-00	Inweka	Model - Homogenizer, Sr.No . 421113.0811	Yes	
9	Mechanical lab stirrer	MR 009-00	Remi, Mumbai	FEUG 14750	Yes	
10				FEUG 14752	Yes	
11				FEUG 16353	Yes	
12				FEUG 14748	Yes	
13				FEUG 14753	Yes	
14	Environmental test chamber	MR 010-00	Remi, Mumbai	1 HC 2016	Yes	
15		MR 010-01		1 HC 2015	Yes	
16	Hardness tester	MR 012-01	Modern lab instruments	Monsanto type	Yes	
17	Disintegration test apparatus	MR 013-01	Metalab	H651	Yes	
18	Vernier caliper	MR014-00	Advance	Dial Caliper	Yes	
19	Collapsible tube sealing machine	MR 015-01	Dolphine	-	Yes	

20	Coating pan	MR 016-01			Yes
21	Digital weighing balance	MR 017-01	Sansui	JW, Sr No:140101937	Yes
22	Friability apparatus	MR 018-01	Metalab	4652	Yes
23	Digital bulk density apparatus	MR 019-01	Metalab	Innovative XCN774, H691	Yes
24	Cooling centrifuge	MR (QA) 020-01	Remi, Mumbai	VCCA-2560	Yes
25	Capsule filling machine	MR 021-01	Dolphin	CF 136 S/O	Yes
26	Brookfield Viscometer LV	MR 022-00	Brookfield Engg. Lab	DVE	Yes
27	High Speed Homogenizer	MR 023-01	Ika	T-25 IKA ULTRA TUREX	Yes
28	Digital Lab stirrer	MR 024-01	Remi, Mumbai	ELF 1377	Yes
29	Digital Lab stirrer	MR 024-01	Remi, Mumbai	ELF 1378	Yes
30	Dissolution test apparatus	MR 025-01	Electrolab, Mumbai	Equipment no. 1309322 (08L)	Yes
31	Multiple punch compression (Minipress)	MR 026-01	Karnavati	Rimek	Yes
32	Orbital shaker	MR 027-01	Remi. Electrotechnik	IHC 3193	Yes

33	Tablet Coater	MR028-00	ACG Pharma Technologies PVT Ltd.	Mini Quest T	Yes	
34	Bottle filling Machine	MR029-00	-	-	Yes	
35	Bottle Crimper	MR030-00	-	-	Yes	
36	Collapsible tube filling machine	MR031-00	-	-	Yes	
37	Spray Dryer	MR(PH)32- 02	Labultima	LU-222 ADVANCED	Yes	
38	Digital hardness tester	MR033-00	Laboratory Enterprises	-	Yes	
39	Rapid Mixer Granulator	MR034-00	Genral Mechanical Industries	HSMG-5	Yes	

**Table no: 8.1.8 b. Medicinal Herbal Garden**

<b>Sr. No.</b>	<b>Criteria</b>	<b>Details</b>
1.	Area (Sq.ft)	975 sq. meter
2.	Boundary demarcation	Yes
3.	Garden Status	Permanent
4.	Planting system adopted	Yes
5.	Varieties of plants	52
6.	Adequacy of plants	Adequate

### **Maintenance of Medicinal Garden**

Plants of medicinal garden are taken care by Pharmacognosy department. The annual maintenance contract is given to Papaya Nursery, Nashik. Plants are selected depending upon significance of medicinal value, requirements, nature of soil, temperature, rainfall and humidity. Water is supplied with the frequency of 3 days for 2-2.5 hrs by drip irrigation method to all plants. Fertilizers supplied are Urea, Sufala, Mahadhan and Nimboli. These are mixed in equal proportion and 250 gm of mixture is supplied to each plant. Neon or Roger pesticides are sprayed if necessary. (proportion 15 ml in 15 lit water or as mentioned on pack). Weeding is done regularly. Register is maintained for medicinal garden for record keeping of plants.

**Table no: 8.1.8 c. Types, varieties and number of plants, available in the garden (with names and chief constituents thereof)**

<b>Sr.No</b>	<b>Common name</b>	<b>Botanical name</b>	<b>Type of Plant</b>	<b>No. of plants</b>	<b>Chief Constituents</b>
1.	Spanish Jasmine	<i>Jasminum grandiflorum</i>	Shrub	9	Volatile oil
2.	Indian Jasmine	<i>Jasminum multiflorum</i>	Shrub	15	Volatile oil
3.	Rose	<i>Rosa spp.</i>	Shrub	9	Volatile oil
4.	Jasmine	<i>Jasminumsambac</i>	Shrub	24	Volatile oil
5.	Periwinkle	<i>Vinca/Catharanthus rosea</i>	Herb	10	Alkaloids
6.	Rangoon creeper	<i>Combretum indicum,</i>	Shrub	13	Volatile oil
7.	Umbrella Tree or Screw pine	<i>Pandanus odorifer</i>	Shrub	2	Volatile oil
8.	Oleander	<i>Nerium oleander</i>	Shrub	29	Glycosides, Alkaloids
9.	Vasaka	<i>Adhatoda vasica Nees</i>	Shrub	10	Alkaloids
10.	Aloe	<i>Aloe vera</i>	Herb	5	Glycosides
11.	Eucalyptus	<i>Eucalyptus globulus</i>	Tree	9	Volatile oil
12.	Brahmi	<i>Centella asiatica</i>	Herb	1	Alkaloids, Glycosides, Sterols, Tannins
13.	Lajalu	<i>Mimosa pudica</i>	Herb	2	Terpenoids, Flavonoids, Glycosides, Alkaloids,

					Phenols, Tannins, Saponins, And Coumarins
14.	Lily	<i>Crinum asiaticum</i>	Herb	50	Volatile oil, Flavonoids
15.	Pudina	<i>Mentha piperita</i>	Herb	10	Volatile oil
16.	Neem	<i>Azadirachta indica</i>	Tree	3	Tannins
17.	Betel nut	<i>Areca catechu</i>	Tree	3	Tannins, Alkaloids
18.	Amla	<i>Embllica officinalis</i>	Tree	10	Tannins, vitamin C
19.	coconut	<i>Cocos nucifera</i>	Tree	10	Fixed oil, vitamins, proteins
20.	Ashoka	<i>Polyalthia longifolia</i>	Tree	1	Tannins
21.	Bitter orange	<i>Citrus aurantium</i>	Tree	9	Flavonoids, alkaloids, volatile oil
22.	Sweet orange	<i>Citrus sinensis</i>	Tree	4	Flavonoids, alkaloids, volatile oil
23.	Lemon	<i>Citrus limon</i>	Shrub	15	Volatile oil, vitamin C
24.	Jaswand	<i>Hibiscus species</i>	Shrub	39	$\beta$ -sitosterol, stigmasterol, cyanidindiglucoiside, flavonoids and vitamins, thiamine, riboflavin, niacin and ascorbic acid
25.	Ashwagandha	<i>Withania somnifera</i>	Herb	2	Alkaloids- Withanine, Somniferine, anaferine and



					Anahydrine
26.	Sarpagandha	<i>Rauwolfia serpentina</i>	Shrub	2	Indole alkaloids- reserpine, ajmaline, ajmalicine, serpentine and serpentinine
27.	Datura	<i>Datura metel</i>	Herb	2	Alkaloid- hyoscine, atropine
28.	Ipecac	<i>Cephalis ipecacuhna</i>	Herb	2	Isoquinoline alkaloids- emetine, cephaline
29.	Ephedra	<i>Ephedra sinica</i>	Herb	1	Amino alkaloids- ephedrine, nor- ephedrine, pseudo ephedrine
30.	Tulas	<i>Oscimum sanctum</i>	Herb	10	Eugenol, carvacrol, caryo phylline
31.	Dalimb, Pomegranate	<i>Punica granatum</i>	Shrub	15	Alkaloid, Tannin, Triterpenic acids, flavonoids, anthocyanins
32.	Krushnakamal(creep er)(Passion fruit)	<i>Passiflora incarnate</i>	Climber	2	Harmaline, Harmalol, Har man, Harmine, Sterols, Sucrose, Umbelliferone, Vitexin.
33.	Guggul tree (Indian bdellium-tree)	<i>Commiphora wightii</i>	Tree	2	Steroids- guggulosterone, E- guggulosterone and guggulosterol-I, II, III; diterpenoids, carbohydrates and aliphatic esters,
34.	Kadunimb (Neem)	<i>Azadirachta indica</i>	Tree	3	Flavonol glycosides, Azadirachtin, meliantriol, salanin, nimbi

					n,nimbidin
35.	Safed musali	<i>Chlorophytum borivillianum</i>	Herb	5	Saponin(hecogenin and stigmasterol) alkaloids,
36.	Gulvel	<i>Tinospora cordifolia</i>	Climber	2	clerodanefuranoditerpenes, alkaloids sesquiterpene glucoside
37.	Bhuiamla	<i>Phyllanthus amarus</i>	Herb	2	Lignans(phyllanthine and hypophyllanthine), alkaloids and bioflavonoids(quercetin)
38.	Madhunashini	<i>Gymnema sylvestre</i>	Climber	2	saponins, flavones, anthraquinones
39.	Beheda	<i>Terminalia belerica</i>	Tree	1	Tannin, B-Cetosterol, Gaelic acid, Elegiac acid
40.	Pipali	<i>Piper longum</i>	Climber	2	Essential oil. Mono and sesquiterpenes, caryophyllene (mainly), Piperine
41.	Black pepper	<i>Piper nigrum</i>	Climber	2	alpha- tocopherol, feruperine
42.	Cardamom	<i>Elletaria cardamomum</i>	Herb	1	essential oil
43.	Cinnamon	<i>Cinnamomum zelyanicum</i>	Tree	1	cinnamaldehyde and trans- cinnamaldehyde
44.	Shatavari	<i>Asparagus racemosus</i>	Herb	2	Saponin glycosides
45.	Dioscorea	<i>Dioscoreaalata</i>	Herb	1	Starch,diosgenin, a steroidal sapogenin and its glycosides

46.	Kalmegh	<i>Andrographis paniculata</i>	Herb	2	Bitter principles andrographolide, bicyclic diterpenoid lactone and kalmeghin.
47.	Arjun tree	<i>Terminalia arjuna</i>	Tree	1	Tannins, triterpenoid saponin, Calcium, aluminium and magnesium salts.
48.	Harde	<i>Terminalia chebulica</i>	Tree	1	Tannins
49.	Bel	<i>Aegle marmelos</i>	Tree	1	protein, fat, minerals, crude fibre and energy, carbohydrates and dietary fibre. alkaloids, terpenoids, steriods, phenols glycosides and tannins
50.	Karanj	<i>Pongamia pinnata</i>	Tree	1	karanjin, pongamol, trypsin, fat, saturated and unsaturated fatty acids.
51.	Sindoor	<i>Bixa orellana</i>	Tree	1	vermilion, an orange-red pigment which is the chief form in which <u>mercury sulfide</u>
52.	Sagargota	<i>Caesalpinia crista</i>	Tree	1	Bitter principles bonducin and natin, caesalpin.

**Table no: 8.1.8 d. Details of instruments in sophisticated Instrument Room**

<b>Name of Instrument</b>	Digital Weighing Balance
<b>Make</b>	Shimadzu Corporation, Japan
<b>Model</b>	AUX 220
<b>Specifications</b>	Min: 10 mg , Max: 220 g , e: 1 mg, d: 0.1 mg
<b>Purpose</b>	General weighing

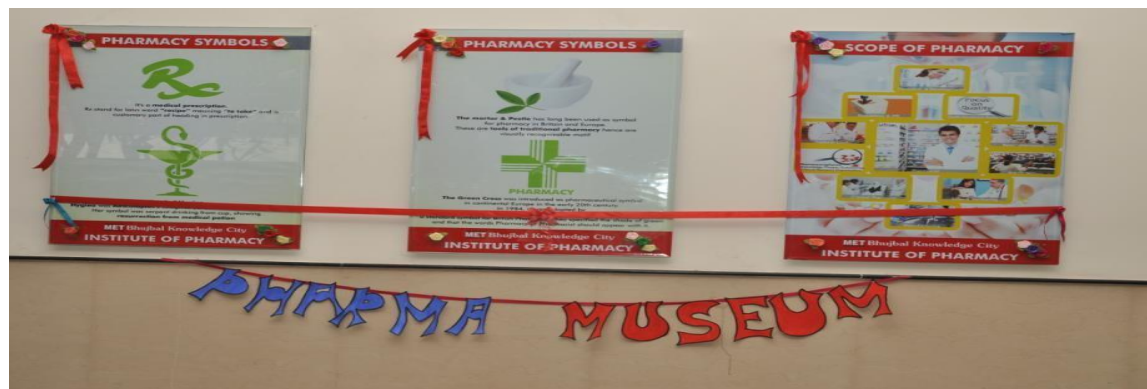
<b>Name of Instrument</b>	Binary High Pressure Gradient System
<b>Make</b>	Jasco Corporation, Japan
<b>Model</b>	HPLC 2000 series
<b>Specifications</b>	Binary High pressure gradient with 7725i Rheodyne loop injector ( 20 $\mu$ L/ 100 $\mu$ L) , Pumps: PU 2080 Plus , Detection: UV (multichannel) (UV 2077 plus) , Software: Borwin Version 1.50
<b>Purpose</b>	<ul style="list-style-type: none"> <li>• Separation and quantitation of pharmaceuticals</li> <li>• Stability studies</li> <li>• Separation and quantitation of drugs in biological fluids</li> </ul>

<b>Name of Instrument</b>	Double Beam UV-Vis Spectrophotometer
<b>Make</b>	Jasco Corporation, Japan
<b>Model</b>	V 630
<b>Specifications</b>	Optical System: Single monochromator 1200 lines/mm concave grating, modified Rowland mount Double Beam  Light Source: Deuterium Lamp (190 nm–350 nm)  Halogen Lamp (330 nm-1100 nm)  Detector: Silicon Photodiode ,Spectral Bandwidth: 1.5 nm (fixed) , Scanning Speed: 10-8000 nm/min , Software: Spectra Manager
<b>Purpose</b>	Quantitation of pharmaceuticals

<b>Name of Instrument</b>	HPLC
<b>Make</b>	Waters
<b>Model</b>	e2695
<b>Specifications</b>	Quaternary low pressure gradient HPLC system with PDA detector equipped with Empower 3 Software
<b>Purpose</b>	<ul style="list-style-type: none"> <li>• Separation and quantitation of pharmaceuticals</li> <li>• Stability studies</li> <li>• Separation and quantitation of drugs in biological fluids</li> </ul>

<b>Name of Instrument</b>	FTIR spectrophotometer With DRS
<b>Make</b>	Shimadzu Corporation, Japan
<b>Model</b>	IRAffinity-1
<b>Specifications</b>	<p>Interferometer: Michelson Interferometer</p> <p>Optical System: Single Beam</p> <p>Light Source: High energy Ceramic light source</p> <p>Detector: DLATGS detector equipped with temperature control mechanism</p> <p>Wavelength Range: 7800 – 350 <math>\text{cm}^{-1}</math></p> <p>Resolution: 0.5, 1, 2, 4, 8 or 16 <math>\text{cm}^{-1}</math></p> <p>Data Sampling: He-Ne Laser</p> <p>Mirror Speed: 4-step selection of 2.0, 2.8, 5 or 9° mm/sec.</p> <p>Software: IR solution</p> <p>Attachments: DRS-8000, Demountable cell, Fixed thickness cell (0.1 mm)</p>
<b>Purpose</b>	Functional Group Identification

## Pharma Museum



Pharma Museum is located on ground floor and first floor of the Institute (Pharmacology and Pharmacognosy lab). Museum is categorized into displays covering Scope of Pharmacy, Ancient History, Pharmacy Symbols, Drug Development Processes, History of Indian Pharma Industry, and Pharmacognosy section covering display of crude drugs and Herbarium. There are **13** glass sandwich displays of pictures covering the contents like Pharmacy symbols (2 slides), Scope of Pharmacy (1 slide), Ancient History (2 slides), Middle Age History (2 slides), History of 19<sup>th</sup> century (2 slides), History of 20<sup>th</sup> century (1 slide), History of 21<sup>st</sup> century (1 slide), Drug Development Processes (1 slide), History of Indian Pharma Industry (1 slide). There are **8** wall mounted showcases highlighting the development of dosage forms of 18<sup>th</sup> century (4 slides) and 19<sup>th</sup> century (4 slides). Forty (**39**) Glass apparatus miniatures have been displayed. Display also involves various types of dosage forms: Liquid Dosage forms, parenterals, capsules, solutions, ointment, aerosols, syrups, Ayurvedic medicines, suspensions, powders, lotions and tablets etc. Crude drug museum displays **73** crude drugs with **20** herbariums.

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**Table no: 8.1.8 d. List of Glass Miniatures**

Sr.No	Particulars	Sr.No	Particulars
1	Addition Funnel (pressure equalizer)	21	Petriplate
2	Clevenger's Apparatus	22	Physical Constant Melting Point
3	Coil Condensor	23	Pipette
4	Column Chromatography	24	RBF, 2 neck
5	Conical flask 100 ml	25	RBF, 3 neck
6	Diffusion Cell	26	Reflux Assembly
7	Double Surface Condenser	27	Round Bottom flask
8	Eddy's Hot Plate	28	Silica crucible
9	Everted Intestine Apparatus	29	Simple Distillation Assembly
10	Extraction Assembly	30	Soxhlet Extraction Assembly
11	Fractional Distillation Assembly	31	Specific gravity bottle
12	Gas trap	32	Spray Bottle
13	Glass funnel	33	Steam Distillation Assembly
14	Homogenizer	34	Thin Layer Chromatography
15	Iodine Flask	35	Vacuum Distillation Assembly
16	Liquid Extraction Assembly	36	Viscometer
17	Maceration flask (beaker)	37	Volumetric flask

18	Measuring Cylinder	38	Water condenser
19	Metabolic Cades	39	Clevenger's Apparatus
20	Mortal & Pestle		

**Table no: 8.1.8 e. List of crude drugs**

<b>Sr.No</b>	<b>Name of Crude Drug</b>	<b>Sr.No</b>	<b>Name of Crude Drug</b>
1.	Acacia	38.	Heena Powder
2.	Aconite	39.	Hirda
3.	Amla powder	40.	Ipecac (Vekhand)
4.	Arjuna Bark	41.	Isabgol
5.	Ashwagandha	42.	Kalmegh
6.	Beheda	43.	Kurchi Bark
7.	Belladonna (Garguti)	44.	Lakdi Revandchini
8.	Benzoin	45.	Linseed
9.	Bhuiamla	46.	Liquorice Root
10.	Bilwa fruit	47.	Makka
11.	Bitter Almond	48.	Manjistha
12.	Black Catechu	49.	Methiseeds
13.	Black Mustard	50.	Myrrh
14.	Black Pepper	51.	Nagarmutha Root
15.	Caraway (Shahajire)	52.	Nutmeg
16.	Cardamom	53.	Nux-Vomica
17.	Castor seed	54.	Orange peel Powder

18.	Chandan Powder	55	Pale Catechu
19.	Chirata	56	Papaya Powder
20.	Cinnamon Bark	57	Patol Powder
21.	Cinchona Bark	58	Picorrhiza
22.	Clove	59	Pipali
23.	Coriander	60	Psoralea (Bavachi)
24.	Cumin	61	Punarnava
25.	Digitalis Leaves	62	Quassia Wood
26.	Dill	63	Rauwolfia
27.	Ephedra (soma)	64	Ritha Powder
28.	Fennel (Badishop)	65	Safed Musali
29.	Gaur Gum	66	Sandal wood
30.	Ginger	67	Senna (SonaMukhi)
31.	Gokharu	68	Shankhapushpi
32.	Ground nut	69	Shatavari
33.	Gudmar	70	Shellac Flakes
34.	Gulvel	71	Silk
35.	Guggul	72	Squill (Jangli Kanda)
36.	Tragacanth Extract	73	Tea Powder
37.	Turmeric (Halkund – Selam)		

**Table no: 8.1.8 f. List of Herbarium**

<b>Sr.No</b>	<b>List of Herbarium</b>	<b>Sr.No</b>	<b>List of Herbarium</b>
1	Aloe	11	Ginger
2	Amla	12	Kalmegh
3	Ashoka	13	Lemon
4	Baheda	14	Liquorice
5	Black Mustard	15	Myroballan
6	Capsicum	16	Neem
7	Cardamom	17	Nutmeg
8	Carraway	18	Shatavari
9	Cinnamon	19	Tulsi
10	Clove	20	Fennel

**Table no: 8.1.8 g. List of facilities in Drug and Poison Information Centre**

<b>Sr. no</b>	<b>List of facilities</b>
1	B.P apparatus
2	Weighing machine
3	Glucometer
4	Haemoglobinometer
5	Blood group detection kit
6	First aid box