

**HERBAL DRUG TECHNOLOGY**B Pharmacy 6<sup>th</sup> sem**MOST IMPORTANT QUESTIONS****2 Marks...**

- ① Define Herbal drug Technology.
- ② Define the following:-
  - i) Herbs
  - ii) Herbal Medicines (also their health benefits) (As per WHO) — 2 definitions — simple & WHO acc. to
  - iii) Herbal drug preparations
  - iv) Good Agricultural practices (GAP) / Define Biodynamic Agriculture.
  - v) Organic farming (how it differ from conventional) —
  - vi) Biopesticides / Bioinsecticides (write about pests eg.) Biofertilizers
  - vii) Herbal medicinal products...
- ③ Write name of sources of herbs
- ④ Write basic principle involved in Ayurveda — six names of Ayurvedic preparations —
- ⑤ Define this in short:-
  - i) Aristas & Asawas
  - ii) Churna, Bhasma, Ghutika
- ⑥ Write about any two microbial pesticides.
- ⑦ Write about curcumin

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How Ash value is determined for standardization of herbal drugs. — (A)

(9) Write about Soxhlet extraction.

(10) Write underlying principle of homeopathy.

(11) Define the term Nutraceuticals and write its scope

(12) Define the term:-

- i) Herbal drug interaction with eg. upset stomach
- ii) Drug - food interaction — eg. Aspirin + ~~food~~ milk + tetracycline, rapid heart beat Caffeine + food
- iii) ~~Health~~ Herb - food interaction
- iv) Health benefits of Amla, fenugreek, Ginseng, Garlic

(13) Write the health benefits of herbal medicines.

(14) How herbal drug interaction can be good some time — (A)

(15) Name of Nutraceuticals used in -

- i) Diabetes
- ii) Cancer

(16) Possible side effects and interactions of

- i) Ginkgo biloba
- ii) Ephedra

(17) Define Herbal cosmetics

(18) What are antioxidants give eg. — (A)

(19) Enlist the general approach for skin care cosmetics. — (A)

(20) Define Herbal excipients with its significance & its advantage.

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- 21) Define Plant Sweetening Agents..
- 22) Write (eq.) of binders & diluents in herbal formulations..
- 23) Define Herbal formulation with eg.
- 24) Define Herbal syrup / Herbal tablets + Herbal shampoo with eg. — (4)
- 25) Define Phytosomes and determine the utility of phytosomes over other formulations. — (4)
- 26) List the parameter for evaluation of herbal tablets. — (4)
- 27) Define the terms: —
- i) Patent      iii) Farmer's right      v) Bioprospecting
  - ii) IPR      iv) Breeder's right      vi) Biopiracy
- 28) What do you mean by evaluation of drugs.
- 29) Define: — i) ASU DTAB + ii) ASU DCC + iii) Schedule Z.
- constitution
- 30) Define Herbal drug Industry —
- Scope & future prospectives
  - List plant based government research institutes in India (A)
- 31) Define Schedule T and write its objectives.
- which type of document is required as per Schedule T.
- OR GMP for ASU.

## HERBAL DRUG TECHNOLOGY

### MOST IMPORTANT QUESTIONS

#### SOLUTIONS - 2 MARKS

①

→ Herbal drug technology →

It is the branch of science which deals with the manufacturing of medicines or drugs from natural plants by using diff-diff techniques

②

→ i) Herbs →

The word herb is derived from the latin word "herb" which means "grass" or "green stalk".

It consists of entire plants or any part of plants such as leaves, flowers, fruits, seeds, stems, wood etc. which is used in various forms for their medicinal purpose.

eg) Tulsi, Neem (leaves) etc—

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11) Herbal medicines →

It is also known as "Herbalism" or "phytomedicine".

- This consists of medicinal plants or any part of plants usually in crude form which have medicinal value (eg.) cough syrup (TULSICOF), Neem antibacterial

# Acc to WHO -

Herbal medicine is a practice which includes herbs, herbal material, herbal preparation and finished herbal products which contain an active ingredient parts of plants.  
(medicinal value)

# health benefits of herbal medicines -

- Garlic → It contains vital nutrients including flavonoids and used in treatment of diabetes, ulcer, epilepsy & hypertension etc.
- Tulsi → used to treat cough
- Mint → used to treat indigestion & IBD
- fennel → strong carminatives and also a anti-inflammatory.

iii) Herbal drug preparations →

These are those preparations which are basically obtained from herbal material by various physical process such as extraction, maceration, distillation etc--

- These can be powdered, extracts, oils, tinctures, juice etc.

(eg) Aloevera juice, Tulsi cough syrup etc--

iv) Good Agriculture Practices (GAP) →

It is a collection of specific and good methods applying to the agriculture for the production of safe, qualitative, healthy and useful crops, food and medicinal products.

\* Biodynamic agriculture →

It is a method of farming which main aim is to treat the farms as a living system that interact with environment and build a healthy living soil in order to produce food that vitalise and help to develop humanity.

v) Organic farming →

It is the production of crops without the use any synthetic chemical or inorganic fertilizers. It only use biofertilizers for the production.

- The main aim of organic farming is human welfare without any harm to environment.

# Biofertilizers → (Natural fertilizers)

These are living microbes that enhances plant nutrition by either mobilizing or by increases nutrient availability in soils.

- used bacteria, fungi in biofertilizers..

(eg) Azospirillum, Rhizobium etc..

vi) Biopesticides/Bioinsecticides →

It is obtained from natural sources like micro-organism, plants, animals, insects and certain minerals.. and used to control the

- they are of three types:-

pests-

• Microbial — • Plant pesticides —

• Biochemical —

(eg) Canola oil and baking soda.

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# Pest → It is a undesired plant or animal drug which causes loss of cultivated plants..

(eg) weeds, viruses, bacteria -- etc--  
insects

vii) Herbal medicinal products →

Those products which are produce from herbs and used in medicinal purpose are called as herbal medicinal product.

- Any medicinal product which contain one or more active ingredient of herbal origin.

(eg) Syrups, mixtures and tablets etc--

③

→ Source of herbs →

Cultivated sources

herbs are obtained from cultivated by various technique

such as tissue culture,  
hybridization etc--

(eg) cultivation of  
aromatic plants.

wild sources → obtained from forests,  
river bank etc.. In their  
 wild forms--

eg. Heartwood of Sandlewood.

(4)

→ Ayurveda →

It is a science of life from which we have to gain knowledge.

Principles →

- Panchamahabhuta (Prithvi, Jal, Vayu, Agni, Akash)
- Tridosha
- Guna-Rasa Sidhanta

# Tridosha →

Acc to this, 5 basic element exist in human body in combination (in balance)

- Kapha (Earth + Water)
- Vata (Air + Sky)
- Pitta (Fire + Water)

KVP [EWASFW]

• In case of imbalance it considered as unhealthy

(eq)

Ayurvedic preparations → turmeric, triphala,  
Ashwagandha, guggul, gotukola,  
boswellia etc—

(5)

i)

→ Arista & Asawa →

they are hydroalcoholic liquid

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forms of traditional Ayurvedic system.

they are alcoholic medicament in which alcohol is self generated by means of fermentation process.

- Arista is prepared from decoction of medicinal plants.
- Asawa is prepared from fresh dried herbs.

ii) • Churna →

It is a fine powder of drug in Ayurvedic system of medicines. It is free flowing and remain its potency for one year.

(eg) Triphala churna.

• Bhasma →

These are powdered dosage form of drugs prepared by calcination (heating the solid in air to change its original forms) of metals, minerals or animal products.

(eg) Tamra bhasma.

• Ghutika →

these medicines are in the form of tablets and pills. They contain single or combination of herbal, mineral or animal drugs.

(eg) Pranda ghutika.

• lehyā →

It is Jam-like medicines, sweetened using Jaggery or sugar

(eg.) chyavanprasa - ↓ fatigue, ↑ health & immunity

⑥

→ microbial pesticides → those pesticides which obtained from micro-organism -

• fungicides →

It control certain weeds and other fungi that kill specific insects.

• Herbicides →

used to kill unwanted plants like weeds in farms & crops (eg.) Atrachlor.

⑦

→ Curcumin → (Haldi)

family → Zingiberaceae.

- It is used as anti-inflammatory agents
- It is also used to treat high cholesterol and pain management
- Also used in various skin treatment.

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⑧ → Ash value → used to judge the identity or purity

destruction of waste material by burning

The residue remaining after incineration is the ash content of the drug.

- high ash value is indicative of contamination, substitution, adulteration & carelessness..

- Determination →

clean dry silica crucible <sup>ceramic/metal container</sup> is heated and weight to a constant weight.

Then 2g accurately sample is taken in it and incinerated by gradually heating <sup>475°C</sup> until free from carbon.

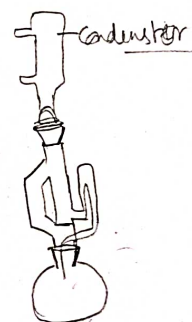
Then crucible was then kept in dissicator and allow to cool to a constant weight the weighed.

$$\% \text{ total Ash} = \frac{\text{Weight of Ash}}{\text{Weight of sample}} \times 100$$

⑨ → Soxhlet extraction →

Also known as hot continuous extraction.

This device allow for continuous treatment of a sample with a solvent over a period of hours to extract compounds..



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(10)

→ Homeopathy → homoeo → similar  
pathos → suffering

It is a system of similar suffering

• It work on the principle of "law of similar"

(likes cure likes)..

for eg)

→ If any drug substances that causes symptoms in healthy person, that drug can also cure same symptoms in sick person.

(11)

→ Nutraceuticals →

It is defined as a food or part of food that provide medical health benefits including the prevention + treatment of disease or prevention of health.

(eg) clove, turmeric, caffeine, spirulina etc-

• Scope →

- to activate immunity
- Antimicrobial capability
- used to maintain some diseases ÷ GR disease,  
Allergic condition, CVS disease, Arthritis,  
Inflammations etc- diabetes, Cancer

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(12)

→ i) Herbal drug interaction → (Herb-<sup>drug</sup>~~drug~~ interaction) ed

When herbal medicinal products / drug or herbs and allopathic drug administered together may interact each other in body leading to kinetic and pharmacodynamic alteration.

antagonism  
synergism

Herb drug + Allopathic drug = Some reactions may be good/bad.

(eg.) Ginkgo biloba + Aspirin/ibuprofen = bleeding  
Garlic + chlorpropamide → hypoglycemia

ii) Drug interaction →

It is alteration in the pharmacological activity of one drug by the concomitant use of another drug / other substances. (associated concomitant)

• Drug-drug interaction → Drug + Drug → some interactions

(eg.) Vicodine + Citizine   
 cause drawsiness

• Drug-food interaction →

Drug + food → some interaction. (eg.) lovastatin + grape juice   
 toxic effects

• Drug-disease interactions →

Drug + disease → some interaction

Aspirin + milk   
 upset stomach

(eg.) pseudoephedrine → ↑ blood pressure --

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## iii) Herb-food interaction →

when herbs / herbal drug and food administered together may interact with each other and cause some interaction.

Herb drug + food → Some rxns -

(eg.) sesame seed with black cumin cause diarrhoea.

## iv) Health benefits of

- Amla → improve the function of liver.
  - Also act as an antifungal, antiviral & antibacterial
  - It lowers cholesterol and blood sugar level.
- fenugreek →
  - used as laxative, anti-inflammatory, antitumor,
  - used to treat breast cancer, arthritis
  - reduce fat intake & appetite.
- Ginseng →
  - used as stimulant, expectorants and carminative agents
  - Act as Immunomodulators
  - used as emetics & tonic.
- Garlic → used in treatment of diabetes,

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duodenal ulcer, epilepsy & hypertension.

- It prevent lower cholesterol, clotting and blood sugar level and boosts immunity.

14

→ Herbal drug interaction can be good →

Definition ---

Some it can be good when it cause synergism effects or when its side effects is helps

(eg.) Ephedra + Caffeine → ↑ blood pressure  
but in case of low bp it helps to normalise the bp.

15

→ Diabetes → definition ---

(eg.) Isoflavonoes (↑ function of β-cells)  
Magnesium (↑ insulin sensitivity)

Cancer → definition ---

(eg.) flavanoids (act as antioxidants)  
chemopreventive -

lycopene (↓ damage to the DNA)  
- found in fruits, vegetables etc..

(16)

→ Possible side effects + interactions →

i) Ginkobiloba →

- Side effects → Allergic skin care, GI complaints, heart attack

- interactions → Ginkobiloba + ibuprofen → ↓ blood clotting  
+  
thiazide → ↑ blood pressure

ii) Ephedra →

- Side effects → liver damage, headache, Anxiety, hypertension.

- Interaction → Ephedra + Caffeine → ↑ B.P.  
+  
halathan → produce Cardiac Arrhythmia

(17)

→ Herbal cosmetics →

It is defined as the beuty products, which posses desirable physiological activities such as skin smoothinging, appearance, enhancing properties with the help of herbal ingredients.

(eg) Banana pulp for dry skin

(18)

→ Antioxidants →

The substances which prevent the oxidation of medicinally active compounds are called antioxidants (used to avoid rancidity of fat tails)

(eg) Ascorbic acid, BHA (Butylated hydroxy Anisole),  
BHT (Butylated hydroxyl toluene) -- / liquorice, Pomegranate  
herbs

(19)

→ General approach for skin care cosmetics →

- Wash your face / cleansing
- Apply toner
- Apply serum
- Apply eye cream
- Moisturizing — dry skin
- face oil
- apply sunscreen — anti-aging

(20)

→ Herbal excipients →

Those agents which have no p/cological activity and used in preparation of herbal dosage for called excipients, additives or p/cutical aid.

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(eg.) Binders - Acacia, Gelatin etc.

# Significance →

- used to prepare dosage form
- biodegradable → no adverse effect
- economical → cheaper
- biocompatible + non-toxic..

# Advantages →

- Safe + do not produce side effects
- ↑ stability + accuracy of dosage form.

(21)

→ Plant Sweetening Agents →

Those substances which are added to drug formulation to mask its bitter taste

(eg.) Glucose, Sucrose - It obtained naturally

- It ~~is~~ should be  
non toxic -  
compatible -  
cheap + easily available

(23)

→ Binders →

used to bind drug with excipients..

↑ bonding strength(eg.) Acacia gum, Tragacanth etc.• Diluents →

added in tablet formulation to provide better tablet properties like improve cohesion, increase flow properties

(eg.) lactose, starch, mannitol etc.

(24)

→ Herbal formulations →It means a dosage form consisting of one or more herbs to provide specific nutritional, cosmetic benefits and meant for use to diagnose, treat of human beings or animals(eg.) Herbal syrup (TULSICOF)

(25)

→ Herbal Syrup →It is a concentrated sol<sup>n</sup> of

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Sugar.

- formulation → Sugar/sucrose, purified water, medicament,  
preservatives, coloring agents, flavouring agents.  
 parabens      ferric oxide      menthol

• Herbal tablets →

tablets are compressed solid unit dosage form of herbal medicament along with suitable pharmaceutical excipients..

(2c)

→ Phytosome →

Also known as herbosomes,

these are Novel drug delivery system (NDDS) containing bioactive phytoconstituents of herb surrounded by phospholipids

- contain water soluble compounds like flavanoids, glycoside etc.. (eg) Ginseng, Curcumin ...

# It has various advantages over conventional dosage form

- It cure a disease by targetting the affected area in patient's body and delivering the drug to that area.

• Greater clinical effects - shows better stability profile, low toxic hazards, antioxidant properties etc-

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(27)

→ Evaluation of herbal tablets →

- Appearance
- friability test
- Dissolution
- Drug content uniformity

(28)

→ i) Patent → It is an exclusive right granted for an invention of a product or process that provides a new way o

i) Patent →

A patent gives its owner the legal right to prevent others from using their idea/drug commercially for a limited period of years..

Such as by making, using, selling or importing a patented product —

ii) IPR (Intellectual Property Right) →

It is the legal right that are given to the inventor or creator to protect and utilize his invention<sup>ideas</sup> or creation for a given period of time.

iii) farmer's right →

Under the act, the farmers have been granted several right that include -

- the right to save, use, sow, exchange, share or sell seeds and propagating materials.
- to register varieties as breeder
- protection from infringement ~~violence~~.

iv) Breeder's right →

Acc to this act, right are granted to the breeder of a new variety of a plant over the propagation material (including seed, cutting, division, tissue culture) & harvested material for a no. of years.

v) Bioprospecting → (Biodiversity)

It is a systemic approach for the discovery of new medicinally useful product obtained from bio-resources like plants, microorganism, animals etc.

(eg) Griseofulvin (the antifungal drug) discovered from the soil fungus Penicillium griseofulvum.

vi) Biopiracy →

It is the practice of commercial exploitation of biochemical or genetic materials which occurs naturally.

- Use of indigenous traditional knowledge without the consent.

- It is unethical and illegal exploitation of one's knowledge or resource without prior consent or benefit sharing agreement.

(eg.) Biopiracy of african super-sweet berries.

(29)

→ Evaluation of drugs →

It defined as the confirmation of its identity and determination of its quality and purity and detection of adulterants.

(eg.) Morphological, microscopical, physical, chemical evaluations etc.

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(30)

→ ASU DTAB →

(Ayurvedic, Siddha, Unani Drug technical advisory board) was formed acc to

Sec. 33c

- to advice central as well as state gov. on technical matters related to this subjects.

ASU DCC →

(Ayurvedic Siddha Unani Drug Consultative Committee)

- acc. to section 33-D
- to advice the central & state gov. and the ASU-DTAB on any matter for the purpose of securing uniformity in the administration of this act.

Schedule Z →

prepared by the sub-committee of ASU-DTAB proposed to make clinical trials mandatory for all the patent or proprietary medicines so as to examine the shelf life of ASU medicine.

(31)

→ Herbal drug industry →

There are those industries/company in which herbal medicines are manufactured..

- In this medicinal plants are used as raw material for production of various industrial products to fulfill the demands of market.

# Scope →

It is very fast growing sector in international market. In India various system of medicines like AYUSH (systems) are being utilized for the health care of peoples.

future prospects

- New leads
- Phytochemistry
- Molecular biology
- Plant biotechnology
- Modern herbal formulation
- Nutraceuticals

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list - plant based government research institutes

① Anya Vaidya Shala - Kotta Kal

② Gujarat Ayurveda  
University - Tam-Nagar

③ Central council for research in  
Ayurveda & Siddha (CCRAS) - New Delhi

④ National botanical Research  
Institute (NBRI) - lucknow

32

→ Schedule T →

It is defined as the schedule of  
D & C act & rules which represents the  
GMP (Good manufacturing practices) of ASU (  
Ayurvedic, Siddha, Unani) along with area required  
for premises, specification required, qualification  
required, recommended machinery & equipment etc.

Objective →

- Raw material used in the manufacture of

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drug are of prescribed quality and free from contamination.

- to maintain the standards
- should be acceptable quality.

# Document required for Schedule T

?? comment section

imp - AKTU pura year