D.PHARM • FIRST YEAR

फार्माकोग्नोसी

अध्याय 12

औषधियों की फाइटोकेमिकल जाँच

हिंदी अध्याय नोट्स



DIPLOMA IN PHARMACY

PHYTOCHEMICAL INVESTIGATION: OVERVIEW

DEFINITION

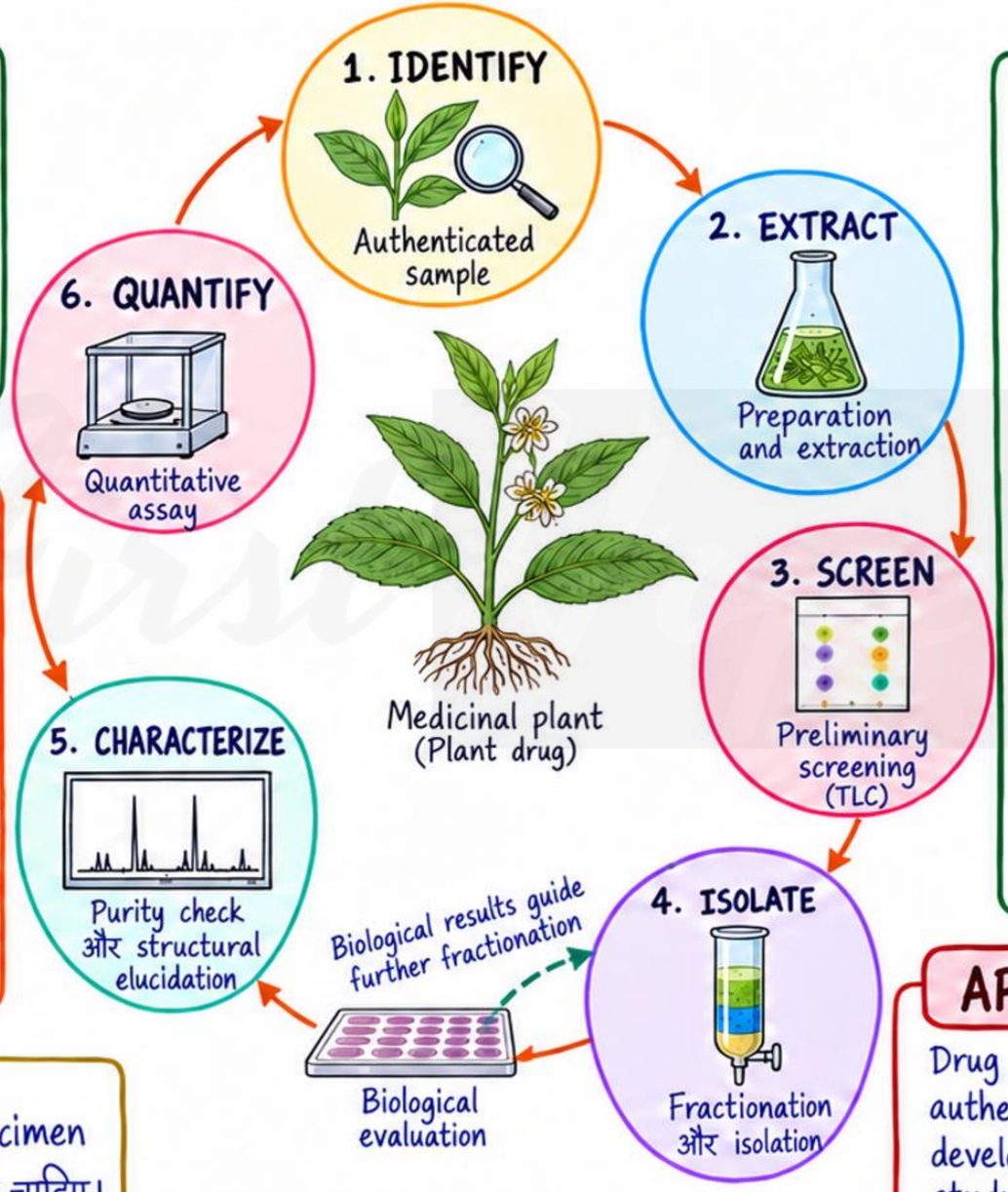
Phytochemical investigation plant drug के chemical constituents का systematic study हैं, जिसमें compounds detect, isolate, identify और measure करके उन्हें quality या biological activity से relate किया जाता हैं।

MAIN OBJECTIVES

- Classes और individual constituents identify करना
- Bioactive compounds isolate और purify करना
- Chemical structure determine करना
- Markers या active constituents quantify करना
- Compounds को biological activity से correlate करना
- Crude drugs और formulations standardize करना
- Medicines और nutraceuticals के leads discover करना

RULE

हर result correctly identified voucher specimen और documented method तक traceable होना चाहिए।



CORE WORKFLOW

Authenticated sample
↓
preparation
↓
extraction
↓
preliminary screening
↓
fractionation और isolation
↓
purity check
↓
structural elucidation
↓
quantitative assay
↓
biological evaluation

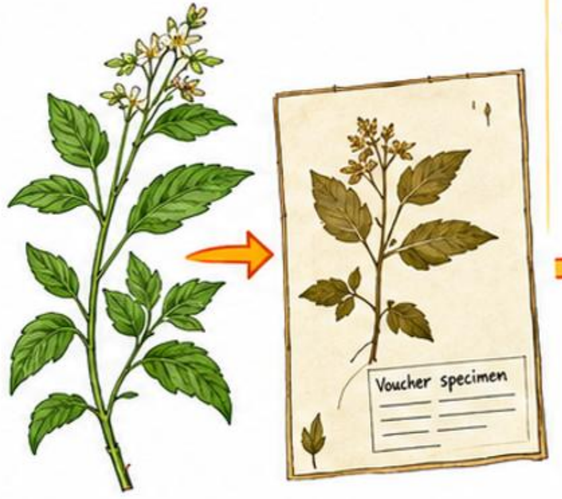
APPLICATIONS

Drug discovery • chemical fingerprinting • authentication • quality control • formulation development • traditional uses का scientific study

SAMPLE PREPARATION AND EXTRACTION

A. COLLECTION AND AUTHENTICATION

Species, plant part, site, date और condition record करें। Identity confirm करके voucher specimen preserve करें।



B. DRYING AND POWDERING

ऐसी conditions में dry करें जो target constituents protect करें। Surface area बढ़ाने के लिए uniformly grind करें, लेकिन excess heat avoid करें।



C. CHOOSE THE EXTRACTION METHOD

Maceration

room या controlled temperature पर soaking



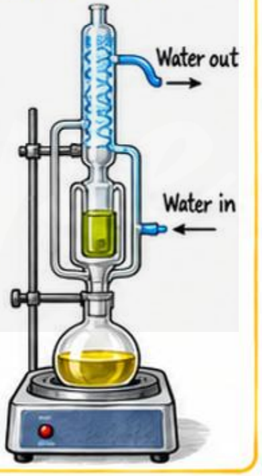
Percolation

packed drug bed से solvent pass होता है



Soxhlet

heat-stable constituents के लिए repeated hot extraction



Ultrasound-assisted extraction

cavitation mass transfer improve करता है

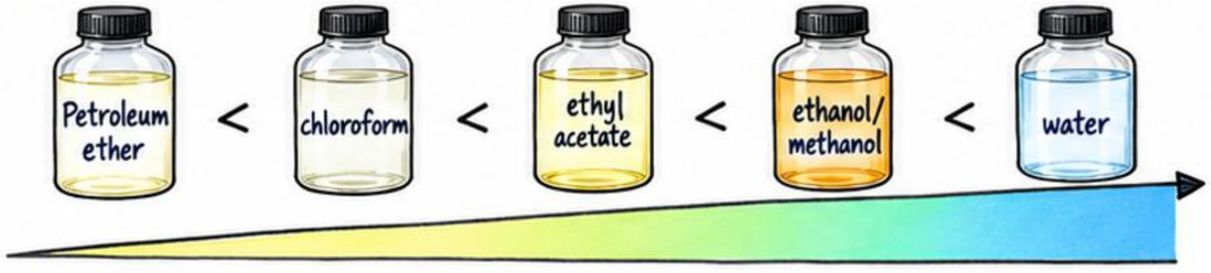


Supercritical fluid extraction

suitable non-polar targets के लिए सामान्यतः supercritical CO_2



SOLVENT POLARITY, APPROXIMATE



SELECTION DEPENDS ON

- Target polarity
- stability
- safety
- selectivity
- cost
- intended analysis

DOCUMENT

Drug-to-solvent ratio, time, temperature, extraction cycles और yield।

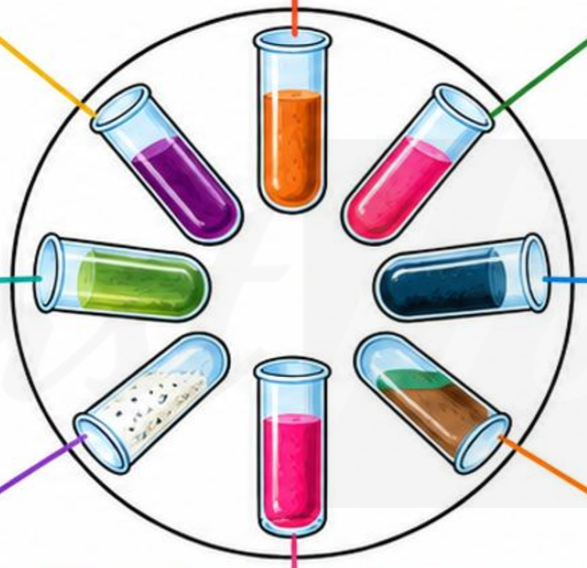
Note: Exact polarity और selectivity solvent composition और target पर depend करते हैं।

PRELIMINARY PHYTOCHEMICAL SCREENING

ALKALOIDS
Dragendorff's या Mayer's test
↓
characteristic precipitate

PHENOLS
Ferric chloride
↓
blue, green, violet या dark colour

FLAVONOIDS
Shinoda test
↓
pink, red या orange colour
Alkaline reagent test
↓
yellow colour जो acid से कम होता है



STEROIDS / TRITERPENOIDS
Liebermann–Burchard test
↓
class के अनुसार characteristic green/blue या red-violet colour

TANNINS
Ferric chloride
↓
blue-black या greenish colour

SAPONINS
Froth test
↓
stable persistent foam

CARDIAC GLYCOSIDES
Keller–Killiani test
↓
interface पर brown ring; possible bluish-green upper layer

ANTHRAQUINONE GLYCOSIDES
Borntrager's test
↓
extraction के बाद pink to red alkaline layer

INTERPRETATION | ये preliminary group tests हैं। Blanks, positive controls और confirmatory chromatography या spectroscopy use करें; colour alone compound-specific नहीं है।

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