SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai
Approved by Pharmacy Council of India, New Delhi.
Coimbatore -641035

COURSE NAME : PHARMACOGNOSY

D.PHARM/ I YEAR

TOPIC 4 :

ALKALOIDS,TANNINS,GLYCOSIDES,TERPENOIDS, VOLATILE OILS,RESINS

Design Thinking in Pharmacognosy

1. Empathize

Understand the challenges in studying and applying natural compounds like alkaloids, terpenoids, glycosides, volatile oils, tannins, and resins.

2. Define

Synthesize insights to define core issues, such as standardizing isolation protocols.

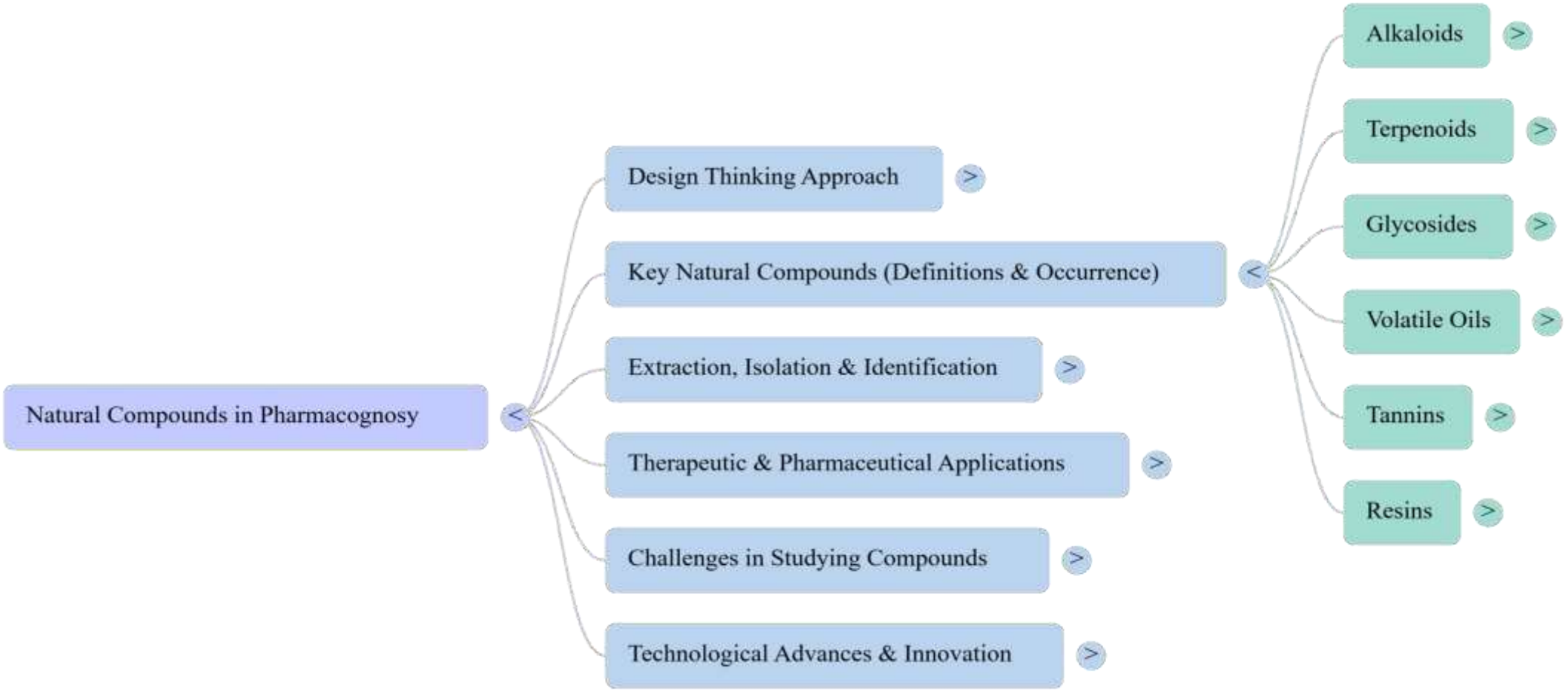
3. Ideate

Brainstorm innovative solutions, such as advanced extraction methods, biotechnological production, and novel therapeutic applications for these natural compounds.

4. Prototype

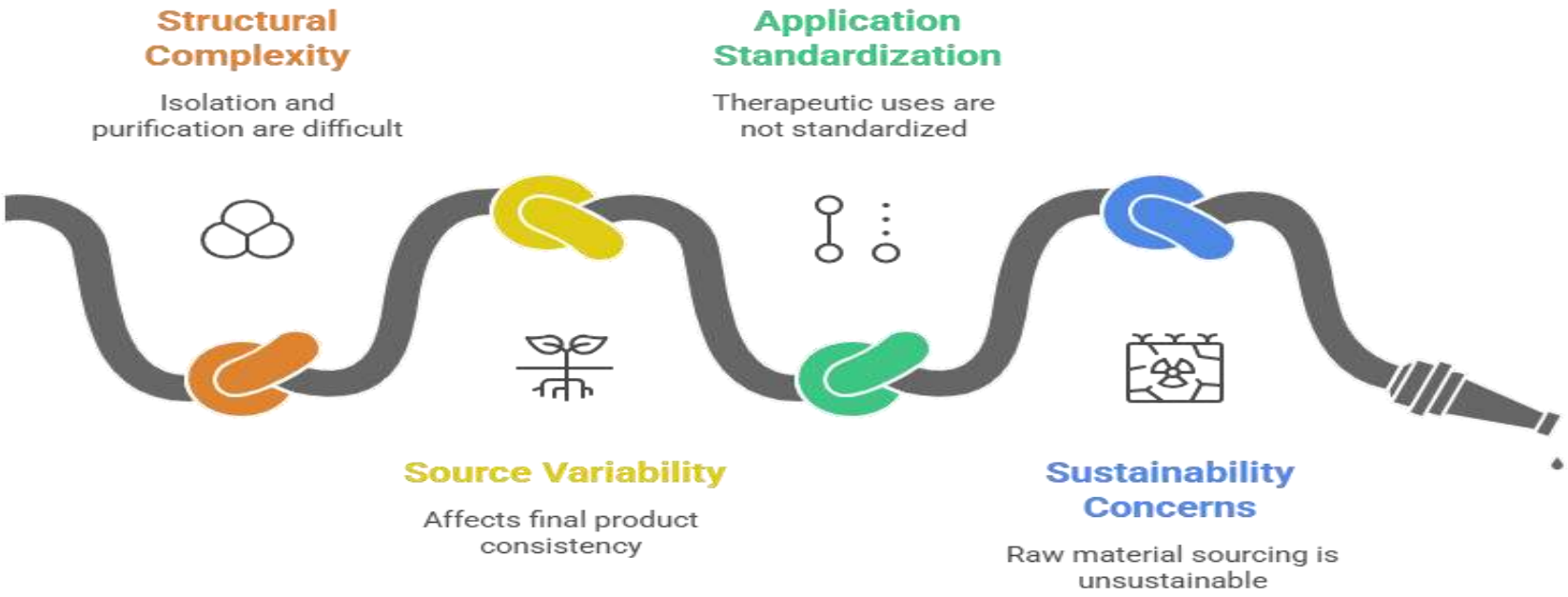
Develop models for testing and evaluating these compounds, including analytical techniques for
identification and formulations for therapeutic use.

MINDMAP

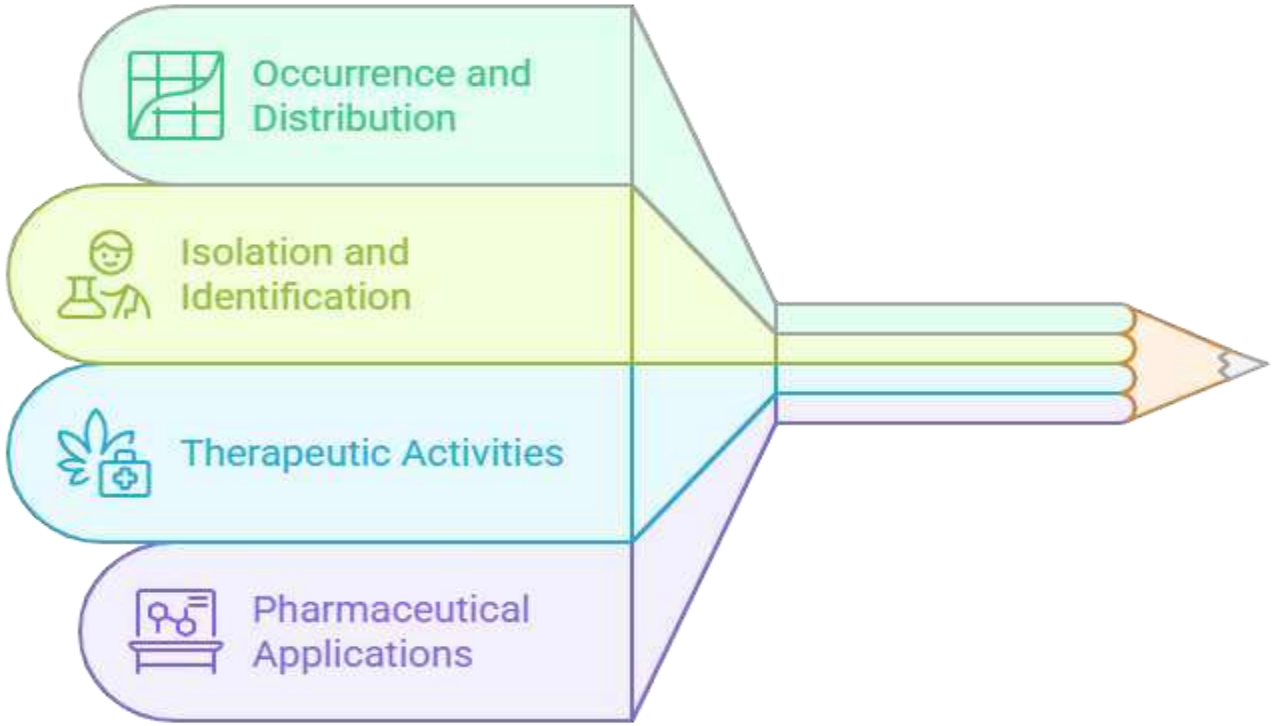

Natural Compounds in Pharmacognosy
Design Thinking Approach
Key Natural Compounds (Definitions & Occurrence)
Alkaloids
Terpenoids
Glycosides
Volatile Oils
Tannins
Resins
Extraction, Isolation & Identification
Therapeutic & Pharmaceutical Applications
Challenges in Studying Compounds
Technological Advances & Innovation

NATURAL COMPOUNDS

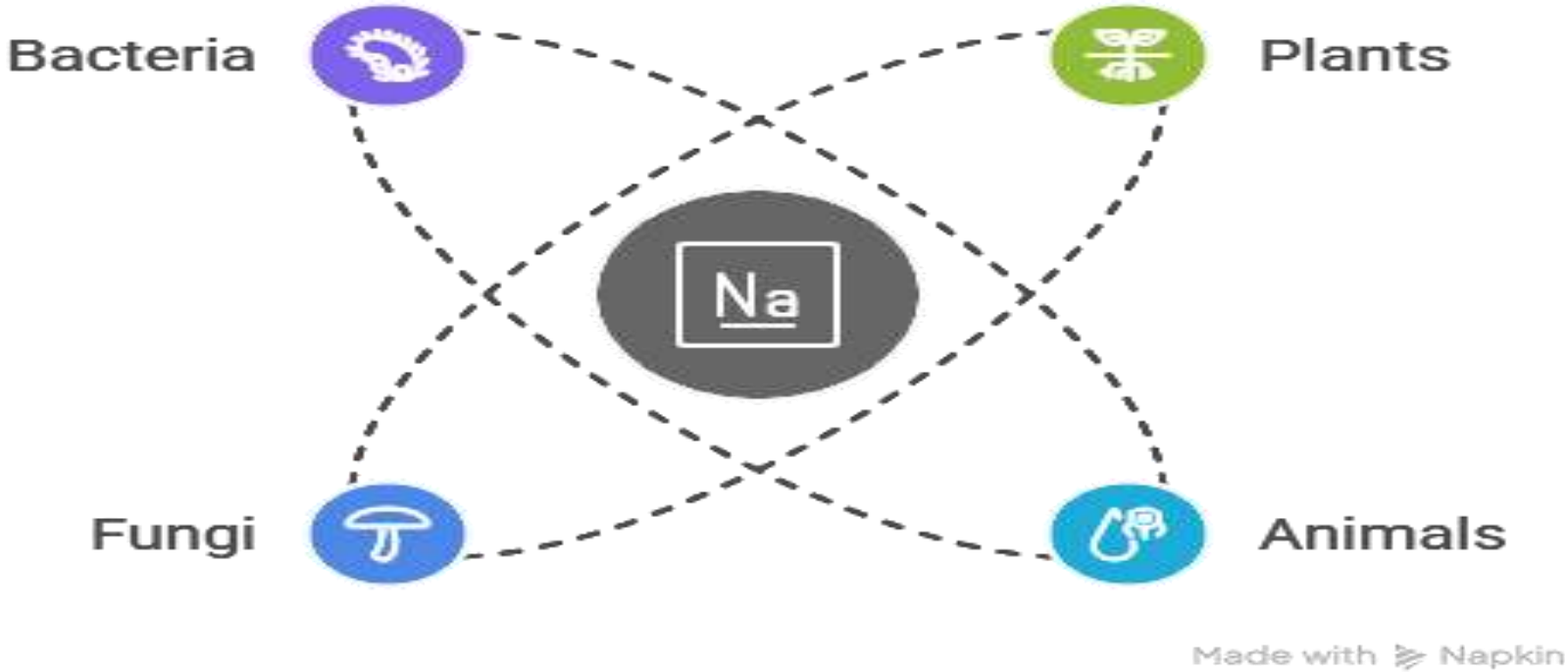
Natural Product Hurdles



Building Blocks of Natural Product Knowledge



Alkaloid Distribution Overview



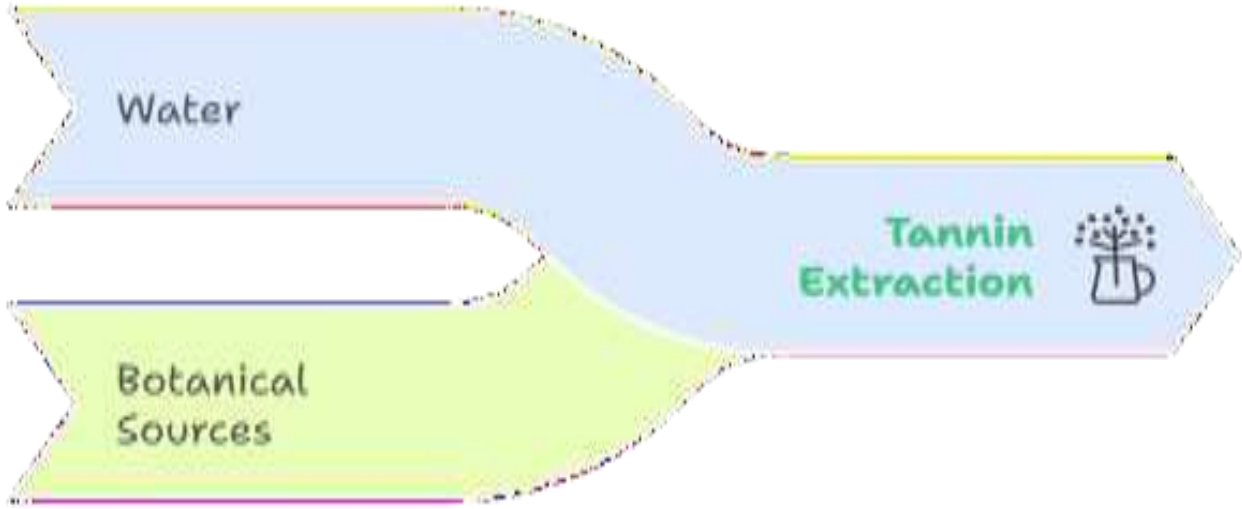
TERPENOIDS

GLYCOSIDES

VOLATILE OILS

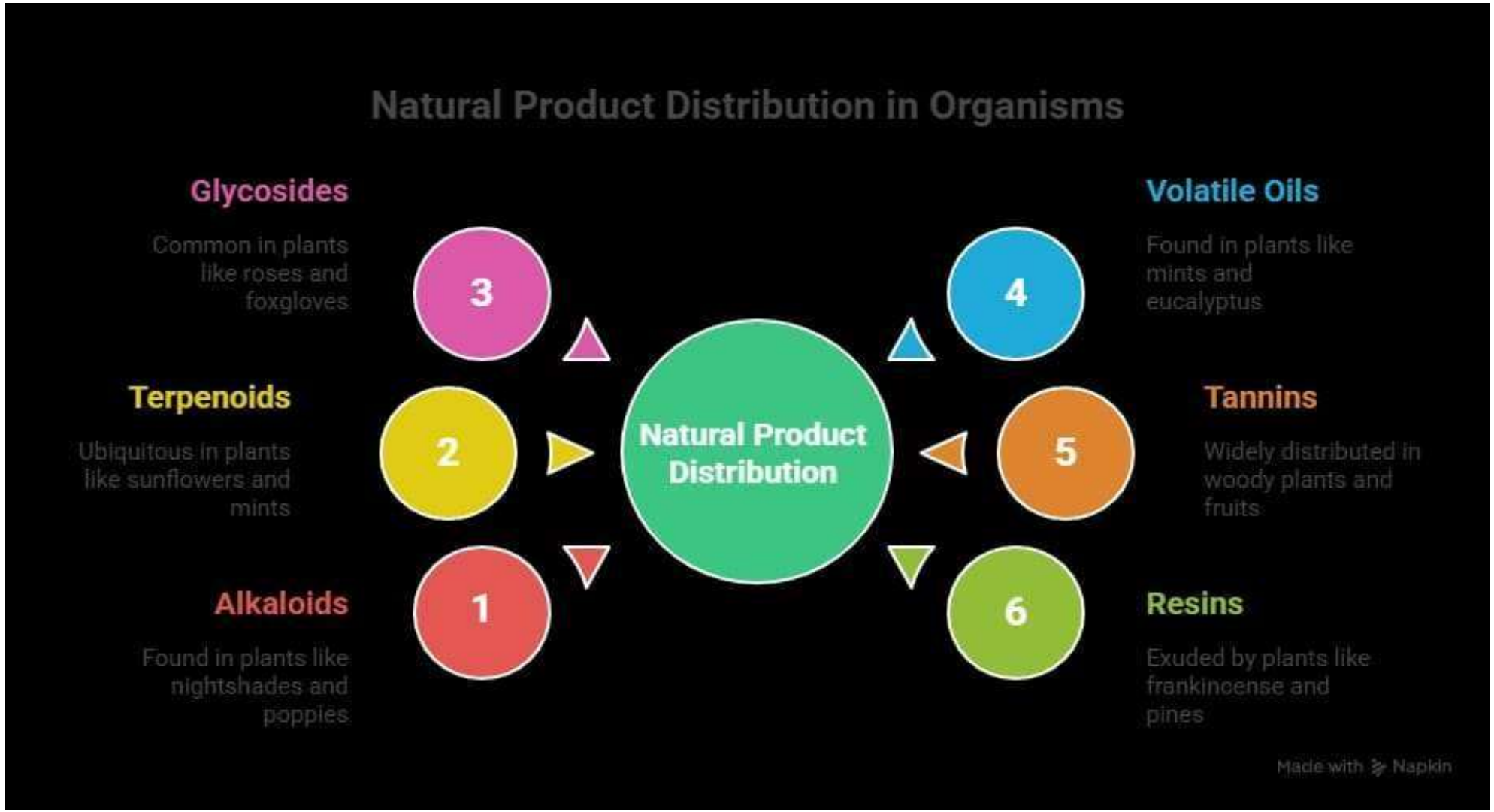
Aqueous Extraction Process

1. Water acts as the solvent for tannin extraction.
2. Botanical sources provide the tannins for extraction.

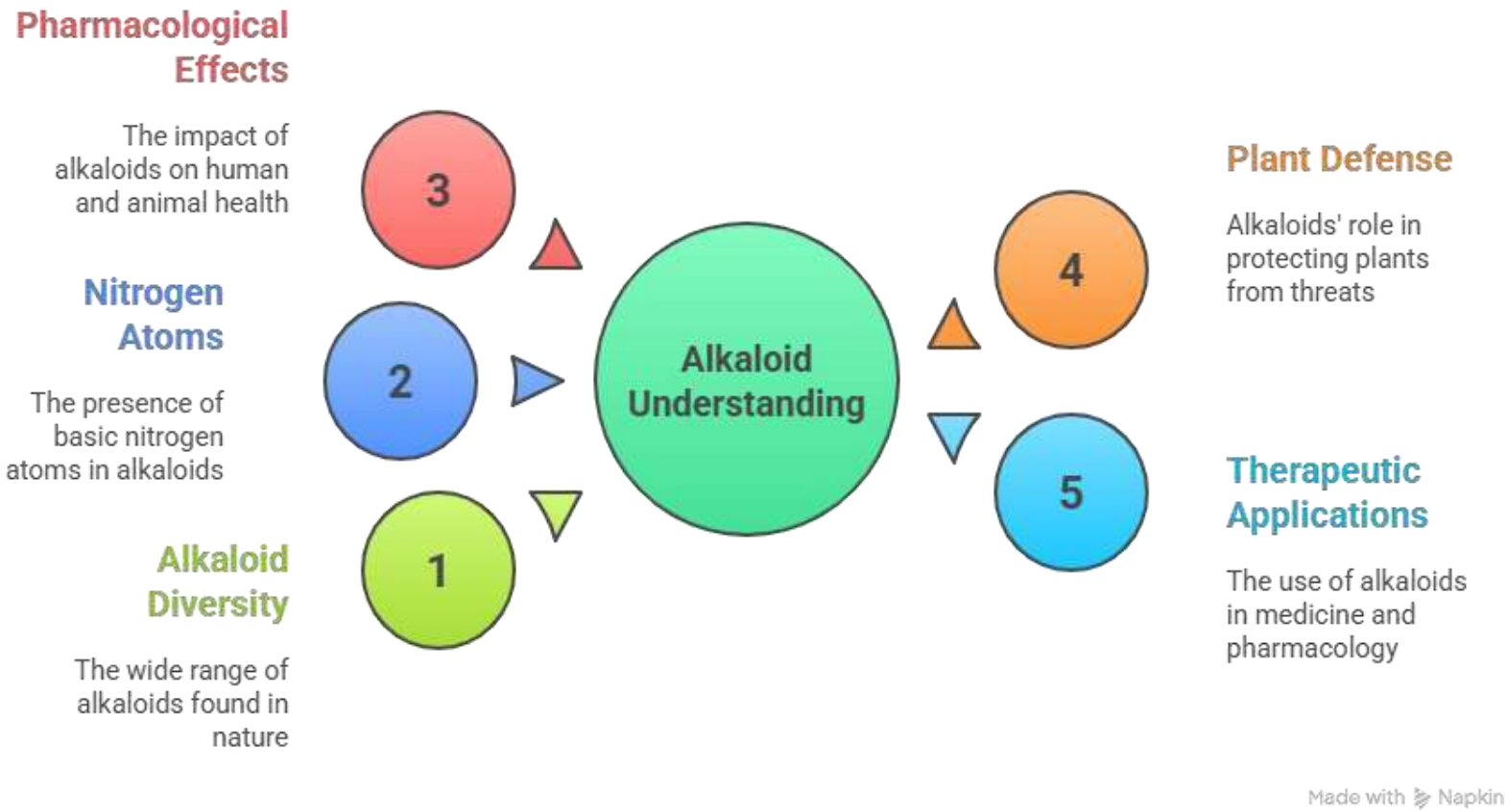


Made with Napkin

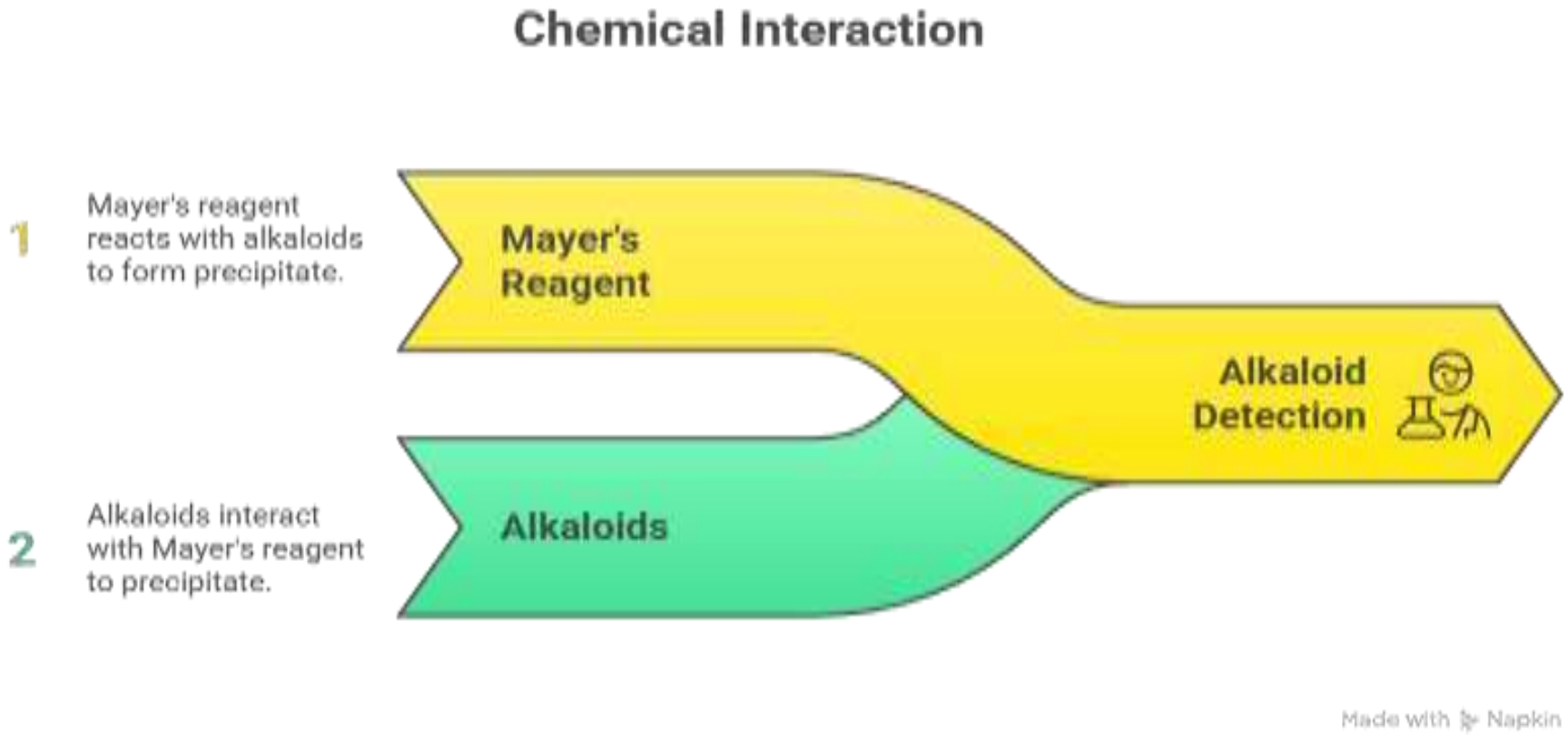
RESINS


Natural Product Distribution in Organisms
Glycosides
Common in plants like roses and foxgloves
Terpenoids
Ubiquitous in plants like sunflowers and mints
Alkaloids
Found in plants like nightshades and poppies
Natural Product Distribution
1
2
3
4
5
6
Volatile Oils
Found in plants like mints and eucalyptus
Tannins
Widely distributed in woody plants and fruits
Resins
Exuded by plants like frankincense and pines
Made with Napkin

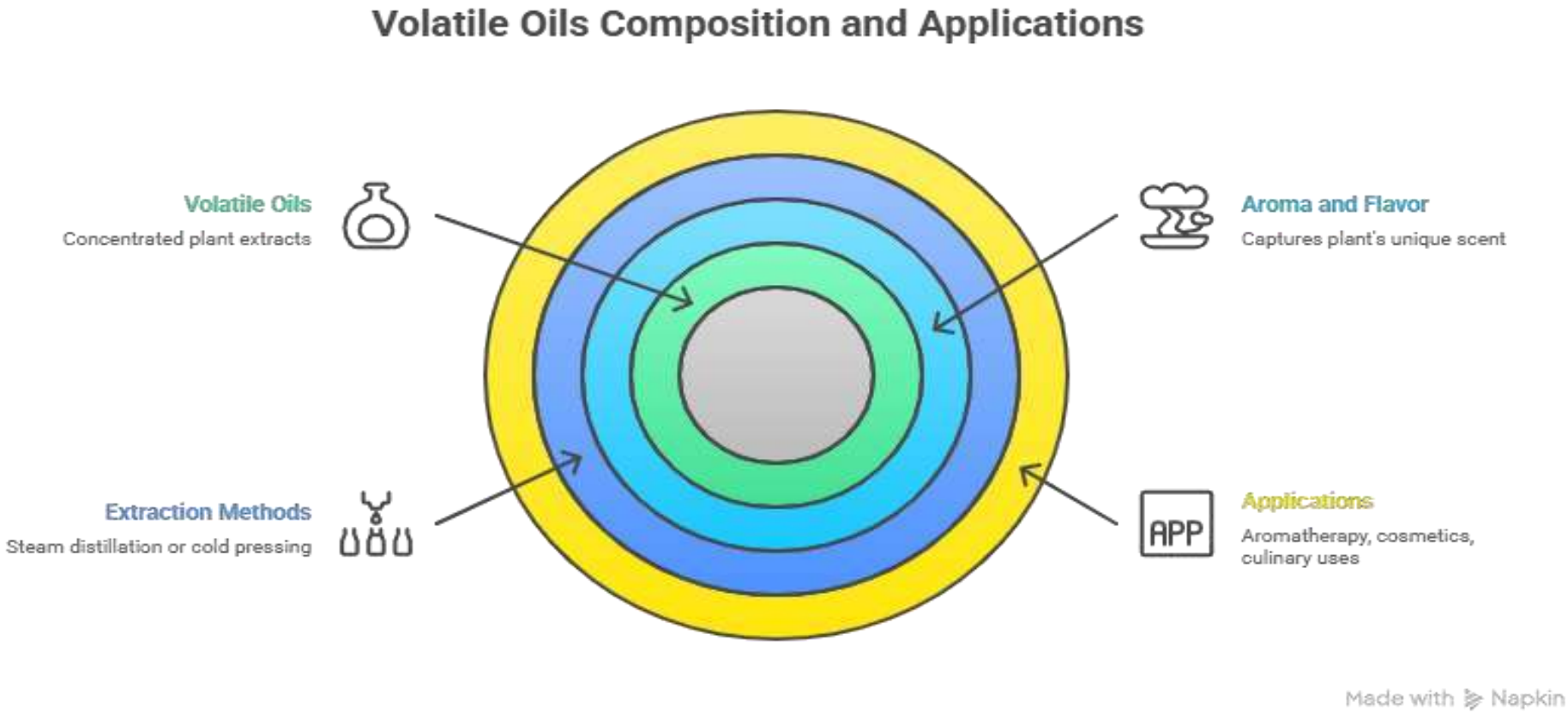
Understanding Alkaloids and Their Applications



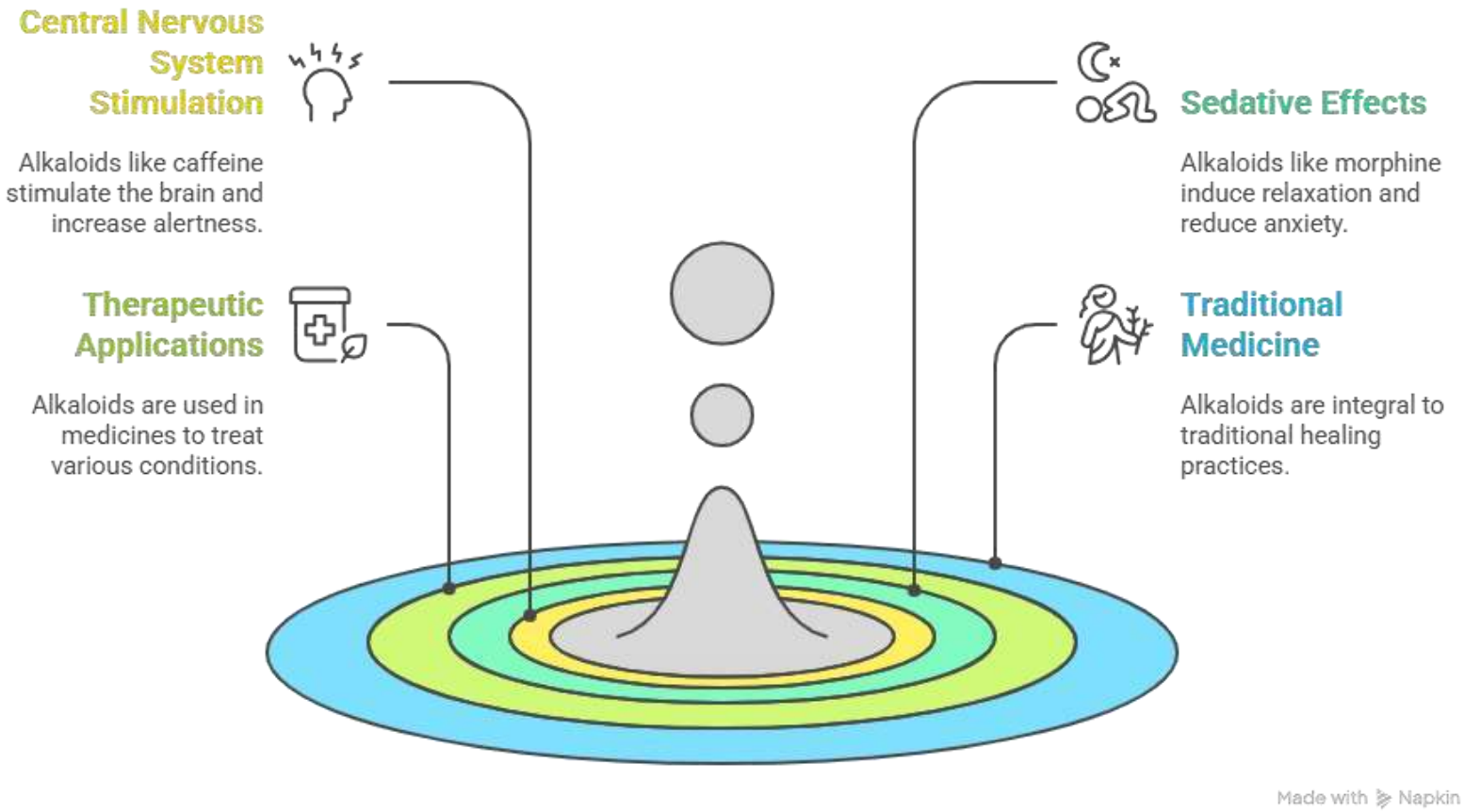
IDENTIFICATION TESTS



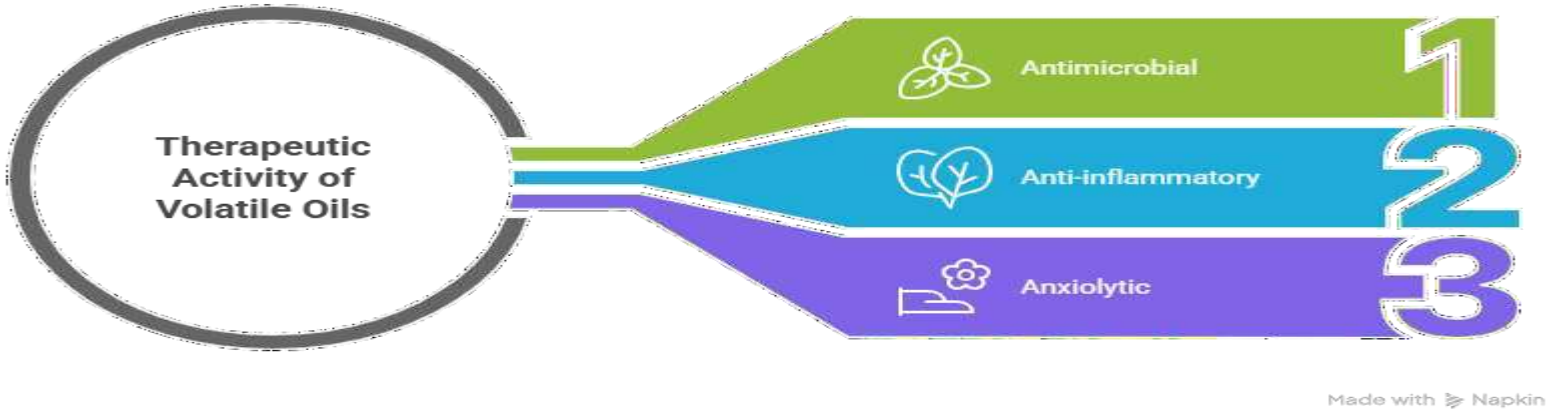
VOLATILE OILS



Alkaloid Effects and Applications



Unveiling the Therapeutic Powers of Volatile Oils



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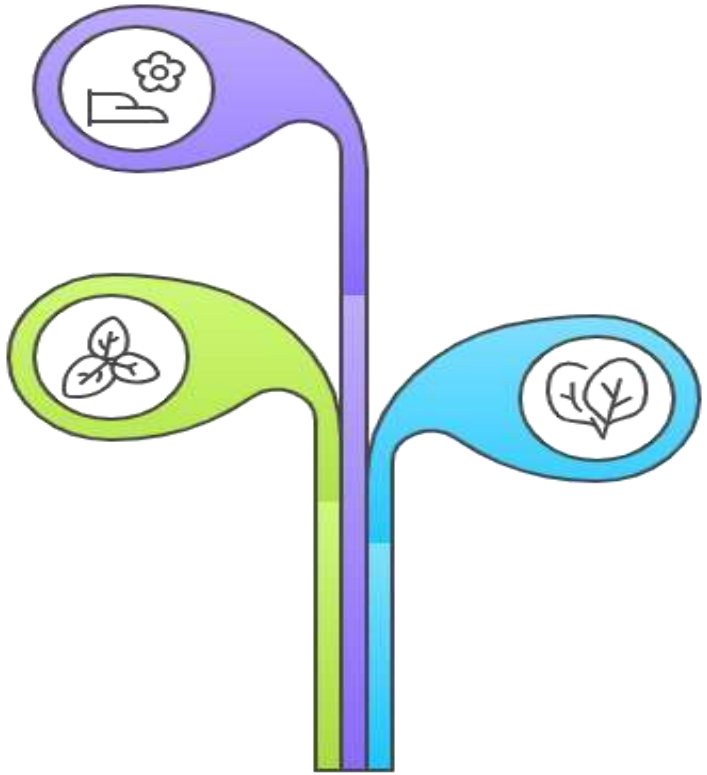


Anxiolytic

Lavender oil provides calming and anxiety-reducing effects.

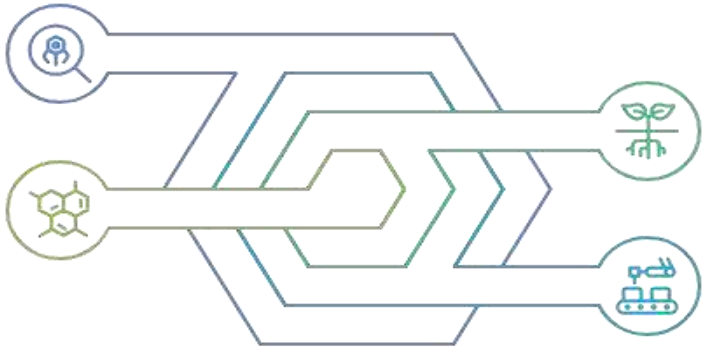
Antimicrobial

Tea tree oil combats microbial infections effectively.

Anti-inflammatory

Eucalyptus oil reduces inflammation and pain.

Terpenoid Applications and Significance



Research Potential

Exploration for future applications

Terpenoids

Core organic compounds derived from terpenes

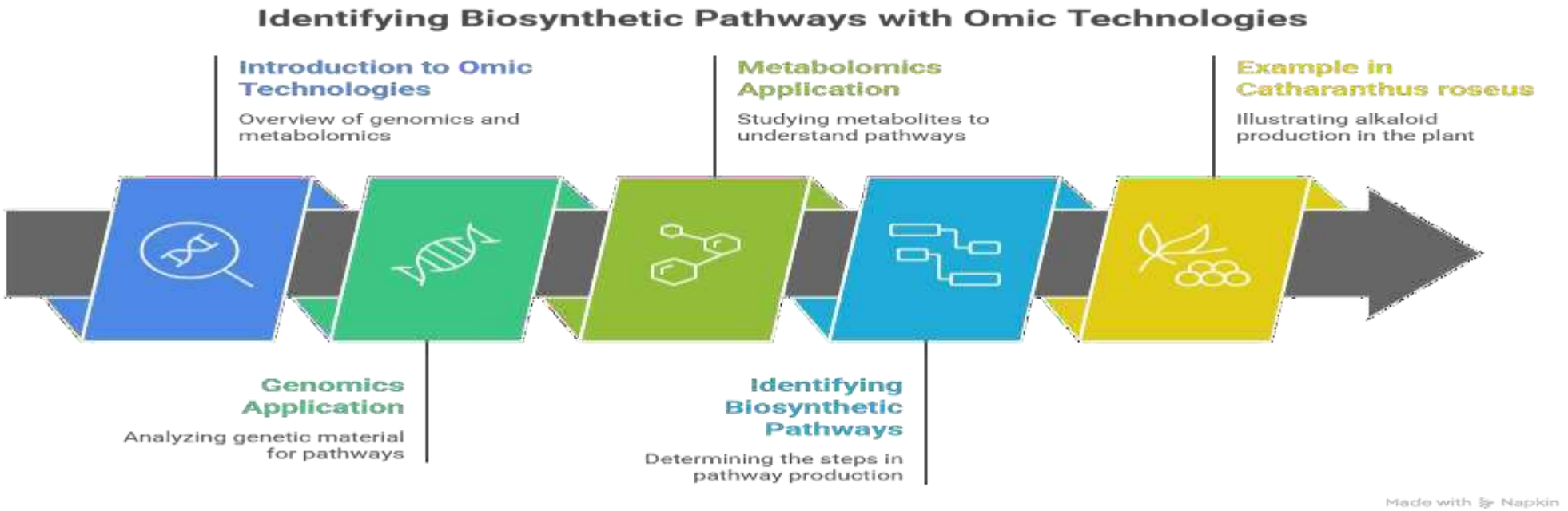
Biological Roles

Functions in plant defense and scent

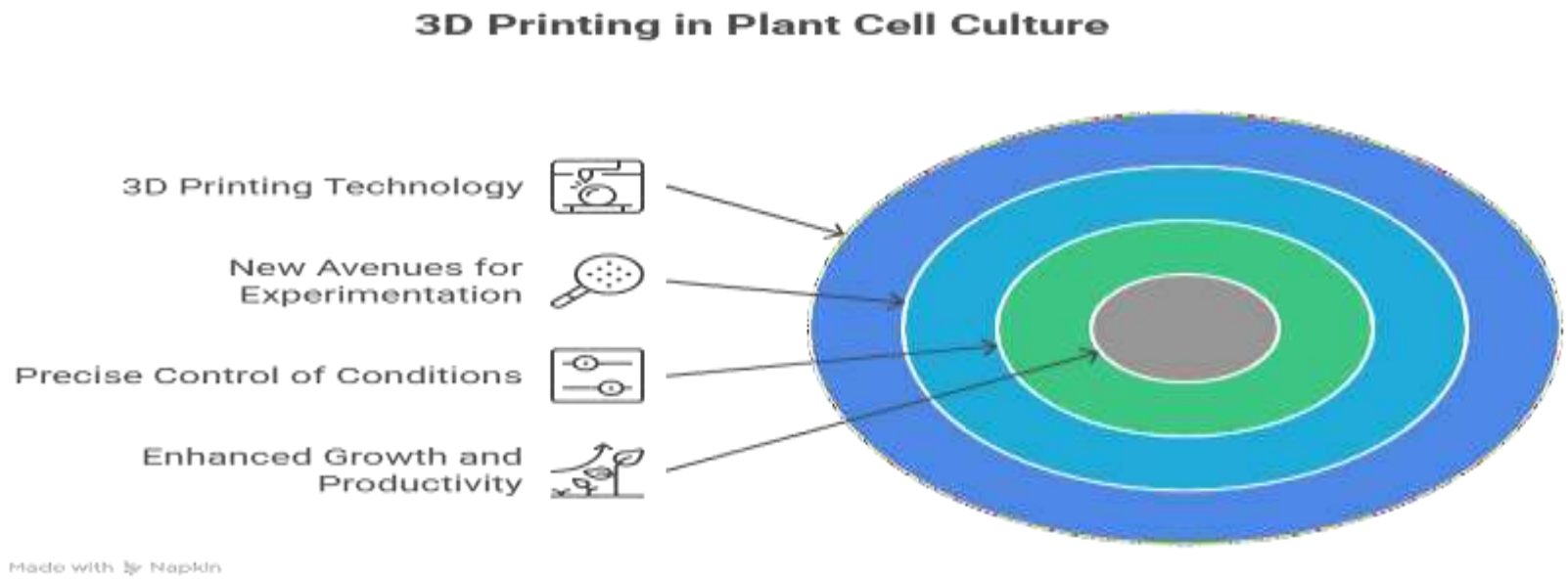
Industrial Uses

Applications in pharmaceuticals and fragrances

INNOVATIVE IDEAS

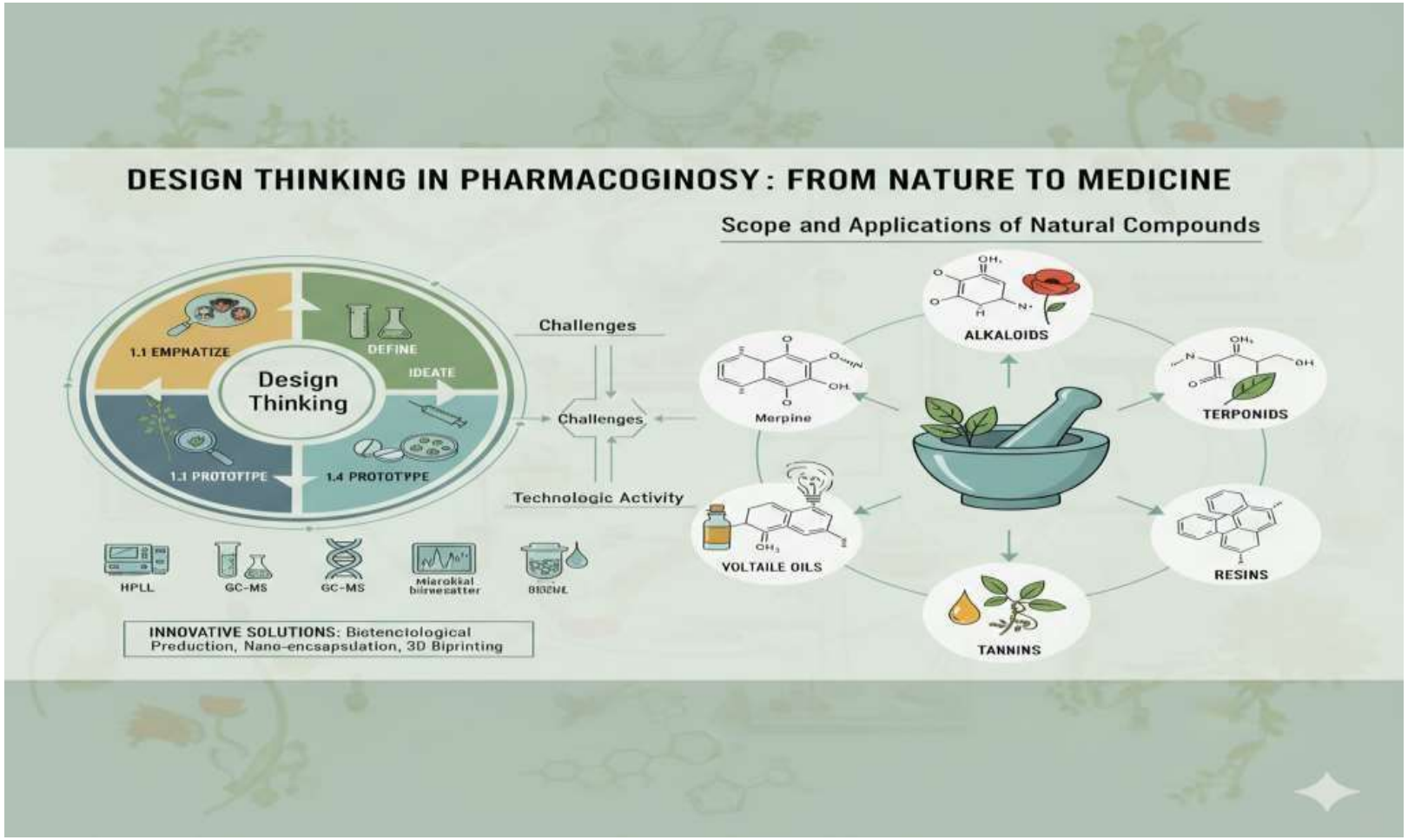


TECHNOLOGICAL ADVANCES



How to optimize alkaloid extraction using green solvents?

SUMMARY


DESIGN THINKING IN PHARMACOGINOSY : FROM NATURE TO MEDICINE
Scope and Applications of Natural Compounds
Design Thinking
1.1 EMPNATIZE
DEFINE
IDEATE
1.1 PROTOTTPE
1.4 PROTOTYPE
Challenges
Challenges
Technologic Activity
HPLL
GC-MS
GC-MS
INNOVATIVE SOLUTIONS: Bietenctological Preduction, Nano-encsapsulation, 3D Biprinting
ALKALOIDS
Merpine
TERPONIDS
VOLTAILE OILS
RESINS
TANNINS

ASSESSMENT

1.What is the primary source of alkaloids?

2. Which test is used to identify cardiac glycosides?

3. Which compound is known for its antimalarial activity?

REFERENCES

Books:

1. Textbook of Pharmacognosy – C.K. Kokate, A.P. Purohit, S.B. Gokhale
2. Trease and Evans Pharmacognosy – W.C. Evans
3. Pharmacognosy – Varro E. Tyler, Lynn R. Brady, James E. Robbers
4. Textbook of Pharmacognosy and Phytochemistry – Biren Shah, Avinash Seth
5. Practical Pharmacognosy – C.K. Kokate

Websites:

1. World Health Organization (WHO) – Traditional Medicine
2. National Center for Complementary and Integrative Health (NCCIH)
3. Pharmacognosy Reviews (phcogrev.com)
4. ScienceDirect – Pharmacognosy Topics
5. ResearchGate – Pharmacognosy Publications


Thank You