



**Centurion**  
UNIVERSITY

# PHYTOCHEMICALS

## LECTURE 1

Dr. G. V. Ramana

Department of Phytopharmaceuticals

School of Agricultural and Bioengineering

CUTM

Parlakhemundi



Centurion  
UNIVERSITY

# INTRODUCTION

- ✘ Plants are sessile
- ✘ Therefore possess innumerable defense and have evolved multiple resistance mechanisms
- ✘ Plants defend themselves by producing some compounds of diverse chemical nature called as secondary metabolites.



**Centurion**  
UNIVERSITY

- ✘ Plant secondary metabolites are recognized as compounds that are essential for the plant acclimatization and defense but have no vital role in the continuation of life processes in the plants.
- ✘ 100,000 known secondary metabolites are to be involved in plant chemical defense systems.
- ✘ Secondary metabolites are significant source of pharmaceuticals



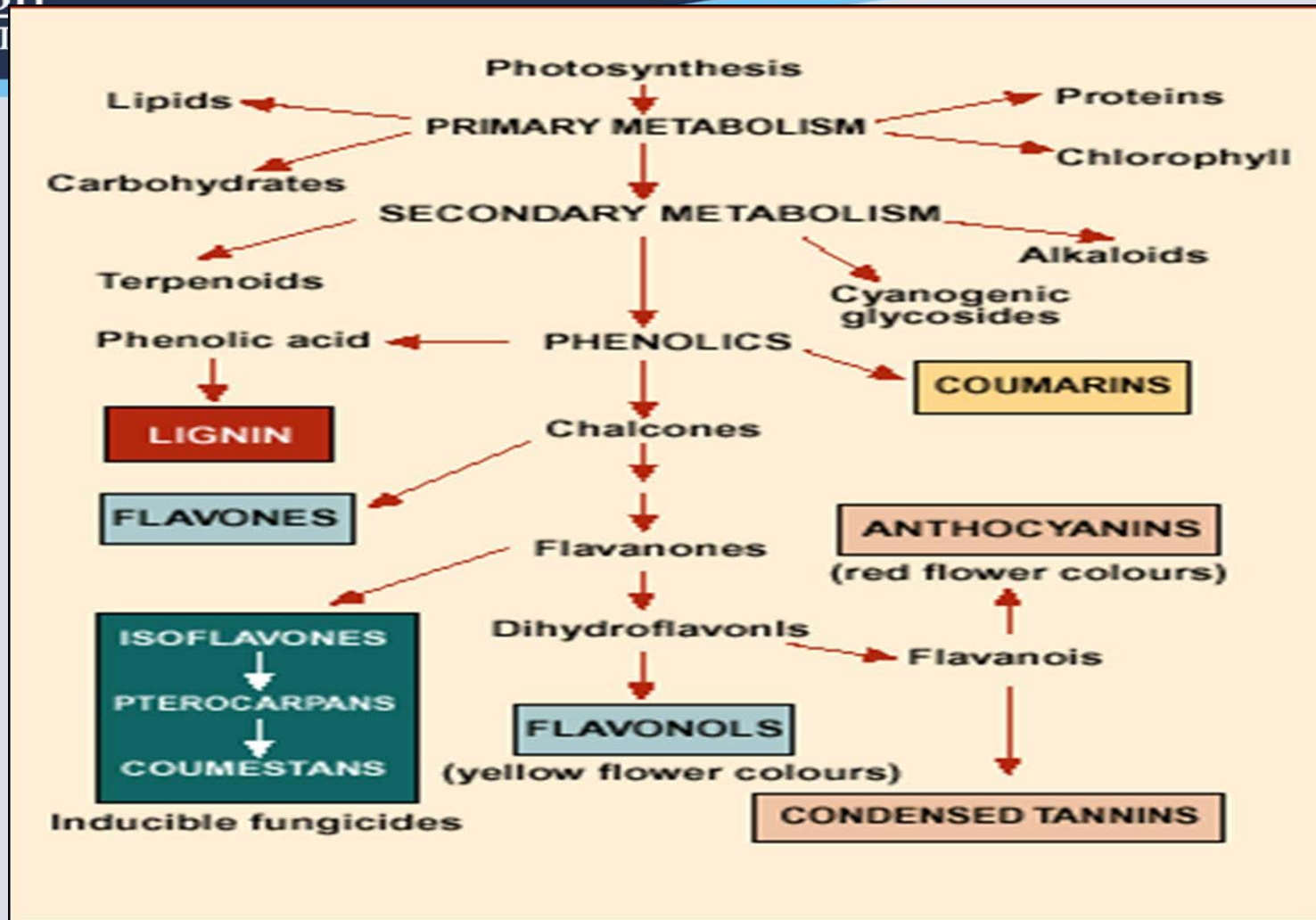
**Centurion**  
UNIVERSITY

- ✘ Necessary for plants to defend from biotic(insects, pests etc) and abiotic stresses(natural calamities like drought, floods etc)
- ✘ Secondary metabolites are responsible for the medicinal value of the plants but they have very limited distribution than primary metabolites.



# SUMMARY OF SECONDARY METABOLISM

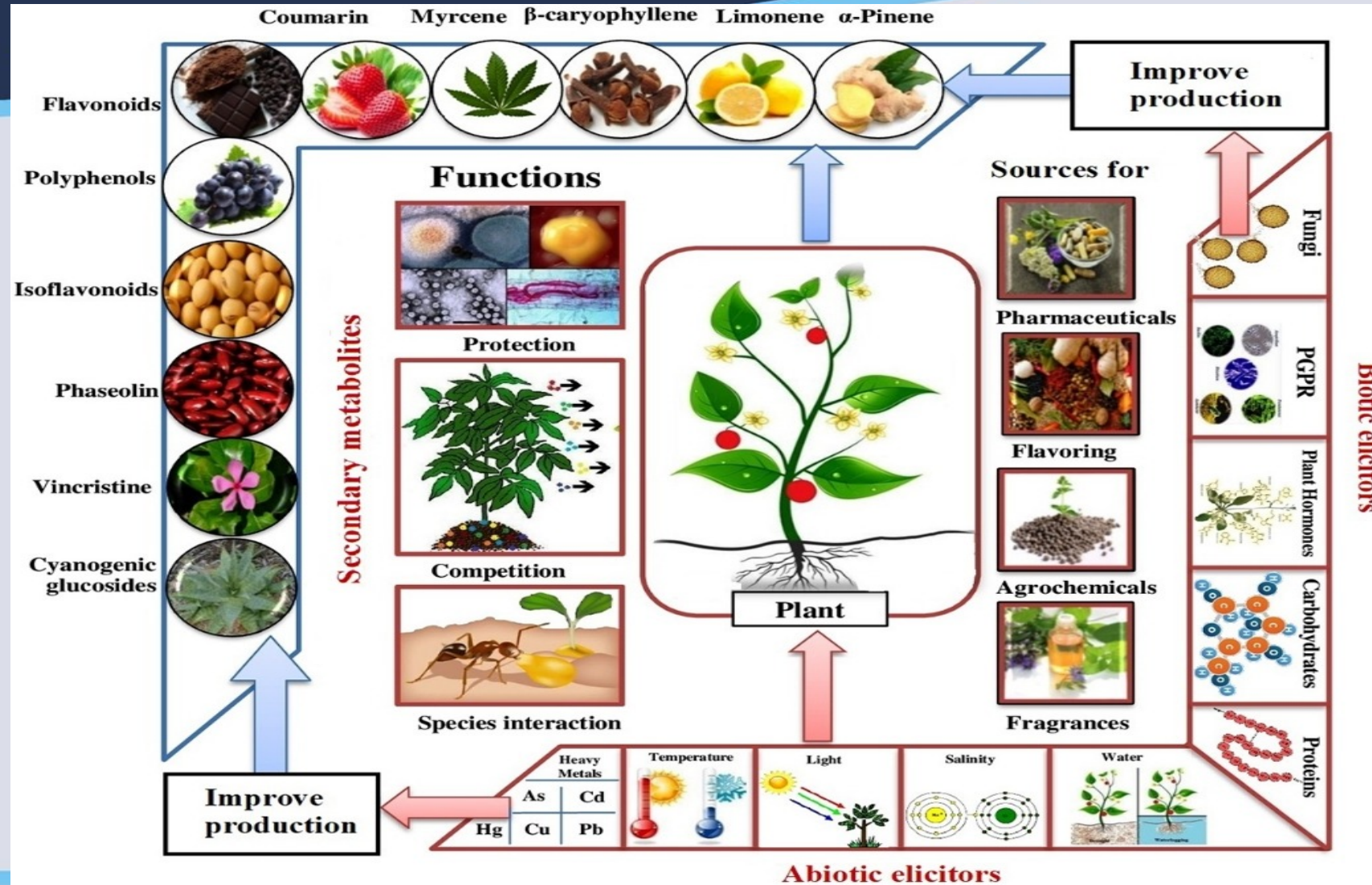
Centurion  
UNIVERSITY





# IMPORTANCE OF SECONDARY METABOLITES

Centurion  
UNIVERSITY





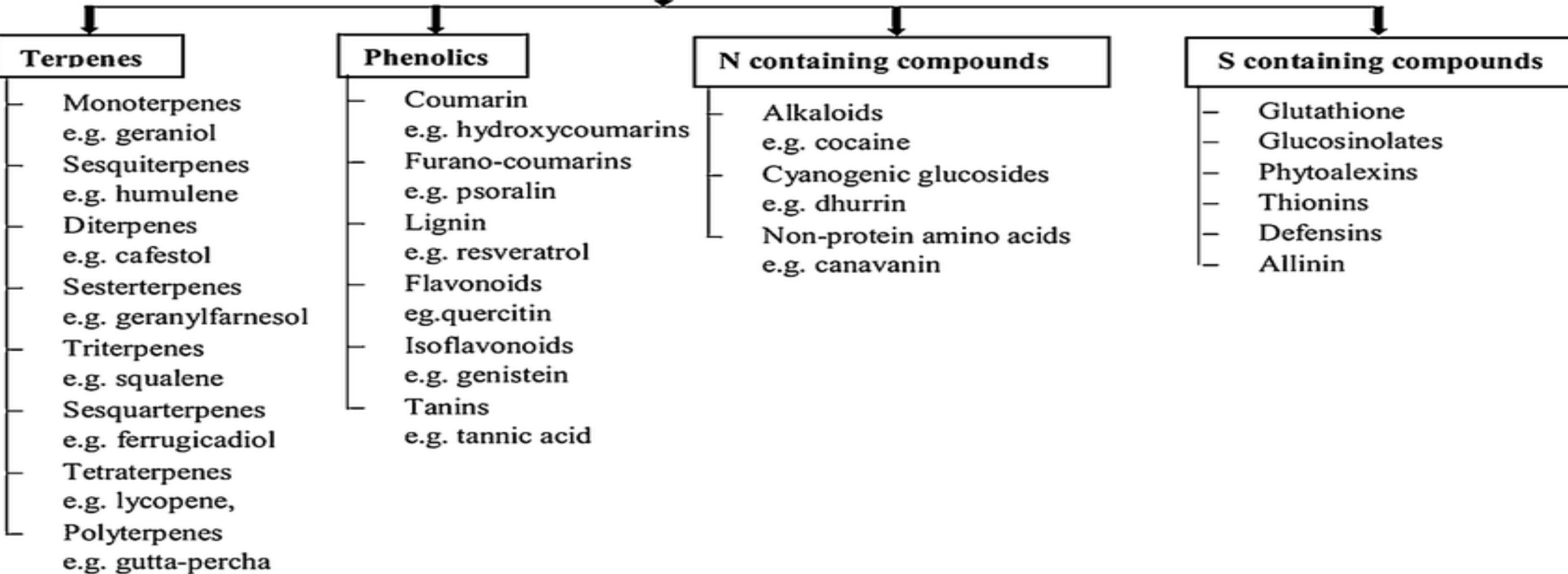
# CLASSIFICATION

Centurion  
UNIVERSITY

- ✘ There are three foremost groups of secondary metabolites
- ✘ terpenes,
- ✘ phenolics and
- ✘ nitrogen, sulphur comprising compounds



## Plant secondary metabolites







**Centurion**  
UNIVERSITY

- ✘ Terpenes/isoprenoids are composed of 5-C isopentanoic acid units.
- ✘ Phenolics synthesized principally from products of the shikimic acid pathway.
- ✘ Members of nitrogen, sulphur comprising compounds are synthesized largely from common amino acids
- ✘ They have a much delimited distribution than primary metabolites



Centurion  
UNIVERSITY

# REFERENCES & FURTHER READINGS

- ✘ Kokate, C. K., A. P. Purohit, and S. B. Gokhale. "Book of Pharmacognosy." *Nirali prakashan 36th edition* (2005).
- ✘ Evans, William Charles. *Trease and Evans Pharmacognosy, International Edition E-Book*. Elsevier Health Sciences, 2009.



**Centurion**  
**UNIVERSITY**

**THANK YOU**