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PHYTOCHEMICALS

LECTURE 3

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CUTM

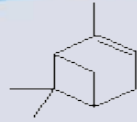
Parlakhemundi



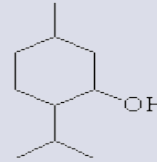
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DIFFERENT TERPENES

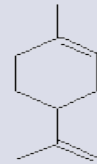
α -pinene



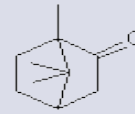
Menthol



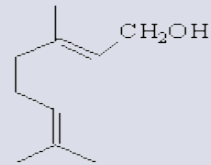
Limonene



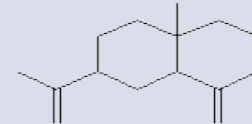
Camphor



Geraniol



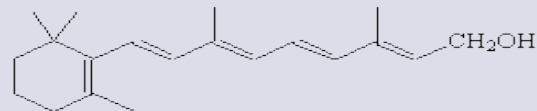
β -selinene



Citral



**Vitamin A
(Retinol)**



β -carotene

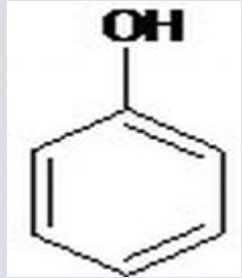




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PHENOLS

- Phenolics probably constitute the largest group of plant secondary metabolites.
- They share the presence of one or more phenol groups
- as a common characteristic and range from simple structures with one aromatic ring to highly complex polymeric substances.





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- They are widespread in plants
- Contribute significantly to the
- color
- taste
- flavor of many herbs, foods and drinks.
- Some phenolics are valued pharmacologically
- Example: anti-inflammatory activities -quercetin



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CLASSIFICATION

- ✘ Phenolics can be classified according to their structure or biosynthetic origin. According to their structures, phenolics can be classified into:
- ✘ Simple phenolics
- ✘ Tannins
- ✘ Coumarins
- ✘ Flavonoids
- ✘ Lignans



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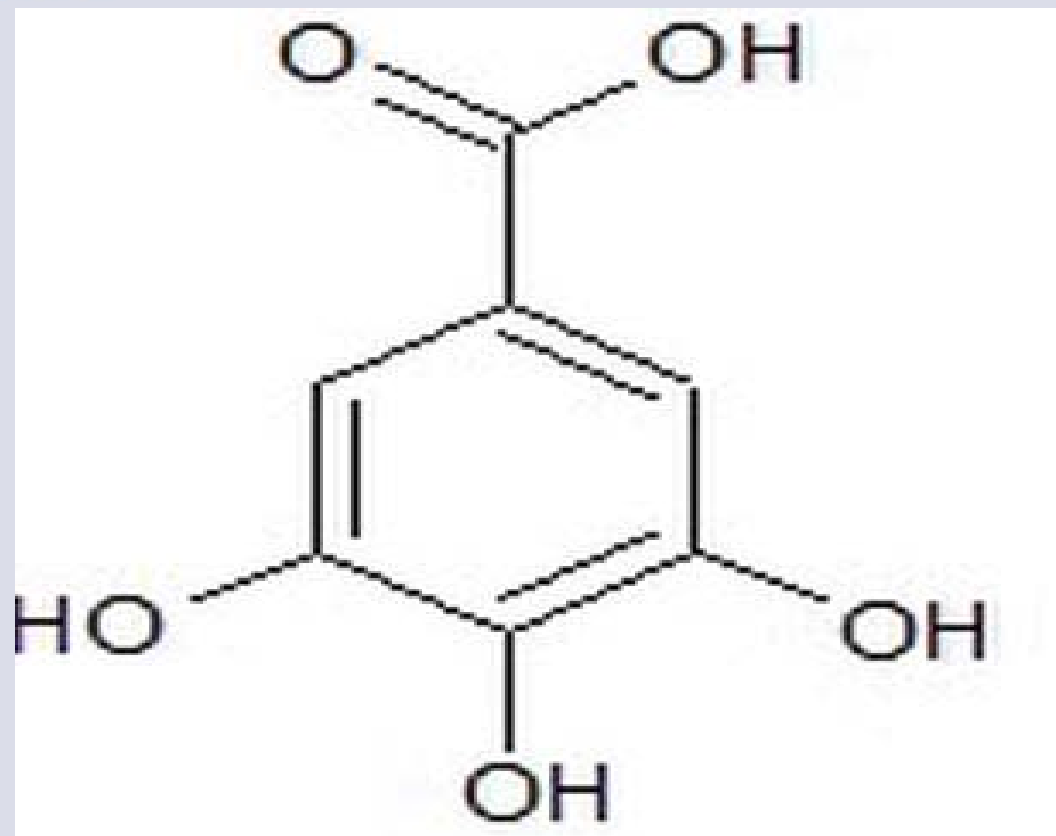
SIMPLE PHENOLS

- ✘ Phenolic acids are ubiquitous among plants
- ✘ Free phenols are rare
- ✘ Common Property is Antimicrobial activity
- ✘ Gallic acid is relatively widespread and is the parent compound of the gallotannins
- ✘ Gallic acid is well known for its antibacterial, antiviral, antifungal, anti-inflammatory, antitumor, choleric and bronchodilatory actions.



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GALLIC ACID STRUCTURE





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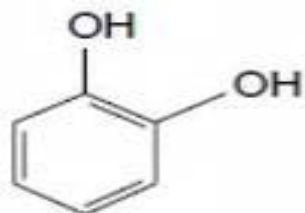
STRUCTURAL SIGNIFICANCE

- ✘ The phenolic compounds in this group vary according to their functional group,
- ✘ Functional group may be
 - + hydroxyl
 - + aldehydic
 - + carboxylic group
- ✘ Example: eugenol (a phenolic phenylpropane), vanillin (a phenolic aldehyde) and salicylic, ferulic and caffeic acids (phenolic acids).

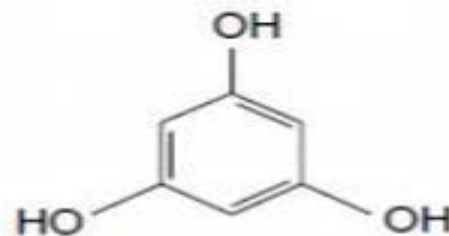


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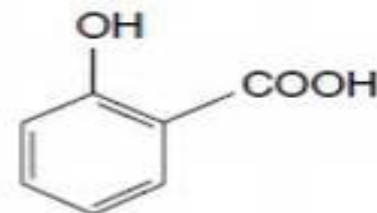
FEW EXAMPLES OF SIMPLE PHENOLS



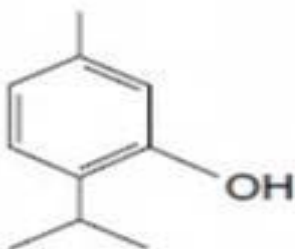
Catechol



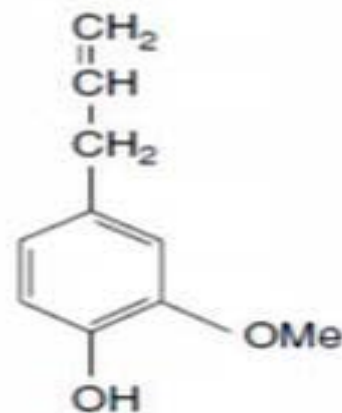
Phloroglucinol



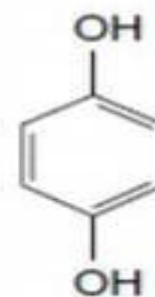
Salicylic acid



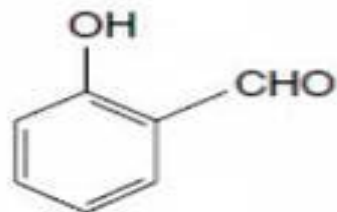
Thymol



Eugenol



Hydroquinone



Salicylaldehyde



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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.



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THANK YOU