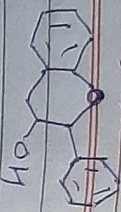


General structure of Flavonoids



Definition: Group of polyphenolic compounds which are found in fruits, flowers, seeds and vegetables.

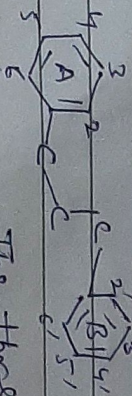
They are more common in higher plants being abundant in families, Polygonaceae, Rutaceae, Leguminosae, Umbelliferae & Compositae.

Flavonoids (named from the latin word flavus meaning yellow, their color in nature) are a class of plant secondary metabolites.

Physiological role → (1) Role in plant defense mechanism - They have a v. limited role in this respect due to their low toxicity when compared with other plant secondary metabolites such as alkaloids.

(2) They are the pigments of flowers and attract pollinators of insects. (3) They play a role in plant growth control by inhibiting & activating enzymes.

Structure of flavonoids - These are possessing 15-C atoms; two benzene rings joined by a linear three C-chain the skeleton can be represented as the C<sub>6</sub>-C<sub>3</sub>-C<sub>6</sub> system.



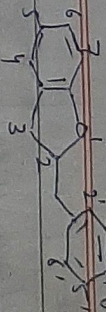
The three C<sub>3</sub> may be included

\*Apigenin is when what you think, what you say, and what you do are in harmony. -Marshall Goldsmith

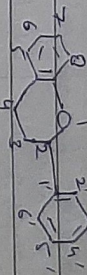
through an Oxygen bond b/w the two benzene ring into -

(1) A six-membered heterocyclic ring (A ring) as a substituent on the benzene ring (C) which constitute the largest gp.

(2)



(3) A six-membered heterocyclic ring (A ring) as a substituent on the benzene ring (C) which constitute the largest gp.



Flavonoids occur as aglycones, glycosides and methylated derivatives - (1) consist of a benzene ring (A) condensed with a 6-membered ring (C) pyran ring, which in the 2 position carries a phenyl ring (B) as a substituent.



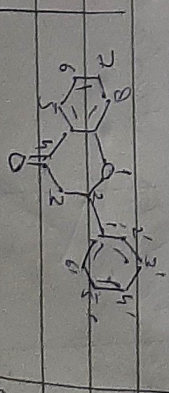
(2) Glycosides → aglycone (non-sugar) + glycone (sugar) - when there are formed, the glycosidic can be located in position 3 or 7 and may be L-Rhamnose, D-Fucose, galactose or arabinose.



Classification - according to chem. str. there are classified as -

1. Flavones :- 2-phenylchromen-4-

- eg: 1. Apigenin
- 2. Lutetolin
- 3. Angerolins
- 4. Quercetin



\*Reference is a key element of success. -Jeffrey Pfeffer

Position	5	7	8	4
OH	OH	OH	OH	OH
OH	OH	OH	OH	OH
OH	OH	OH	OH	OH
OH	OH	OH	OH	OH



② flavonol - 3-hydroxy-2-phenylchromen-4-one

e.g. 1. Kaempferol

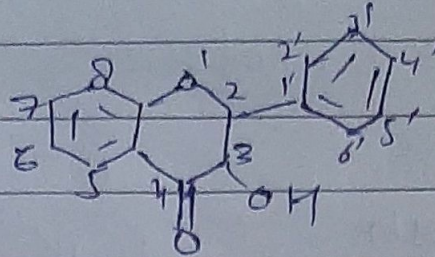
2. Rutin

3. Myricetin

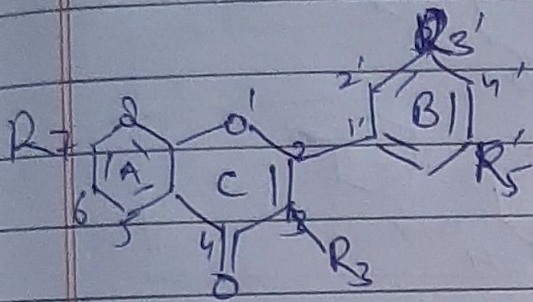
4. Quercetin

5. Quercetin

6. Fisetin



	R <sub>3</sub>	R <sub>7</sub>	C-position	
			R' <sub>3</sub>	R' <sub>5</sub>
1.	OH	OH	H	H
3.	OH	OH	OH	OH
4.	OH	OH	OH	H
5.	O-R <sub>h</sub>	OH	OH	H
6.	OH	ome	OH	H

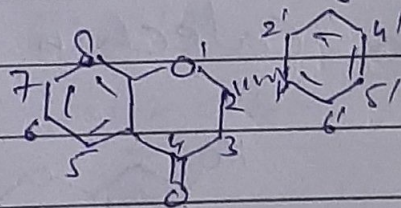


③ flavanone - 2,3-dihydro-2-phenylchromen-4-one

e.g. ① Hesperetin

② Hesperetinidin

③ Naringenin



	5	7	3'	4'
1	OH	OH	OH	ome
2	OH	O-Rubrox	OH	ome
3	OH	OH	H	OH

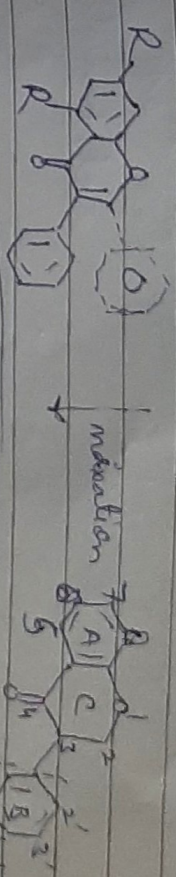
④ flavanonol → 3-hydroxy-2,3-dihydro-2-phenylchromen-4-one

e.g. 1. Taxifolin

2. Silymarin



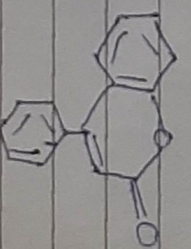
⑥ 9,10-flavones - 3-Phenylchromen-4-one



eg. Genistein  
Baidyan

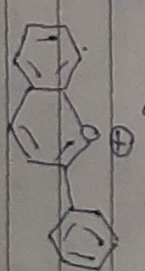
3	5	7	4'
	OH	OH	OH
	H	OH	OH

⑦ Neoflavonoids - ring B in position 4 (4-phenyl-coumarins)

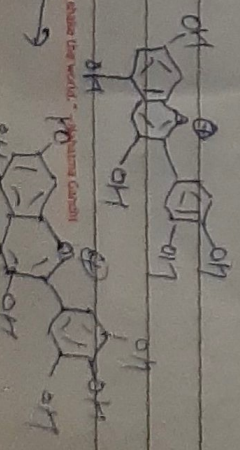


The iso flavonoids & Neo flavonoids can be regarded as abnormal flavonoids

⑧ Anthocyanidins - flavylium (2-Phenylchromenylium) ion skeleton of anthocyanidins

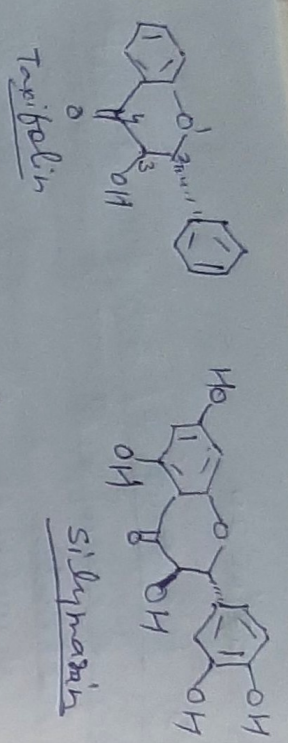


eg. cyanidin  
Delphinidin



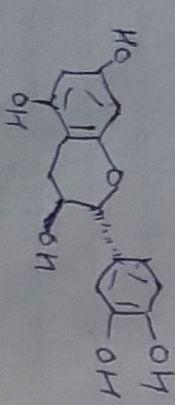
⑤ Flavan -

1. flavan-3-ol	
2. flavan-4-ol	
3. flavan-3,4-diol	



flavan-3-ol known as flavanol

eg. catechin (B-OH)



eg. epicatechin (A-OH)

