

## **BIOACTIVE FLAVONOIDS OF THERAPEUTIC IMPORTANCE**

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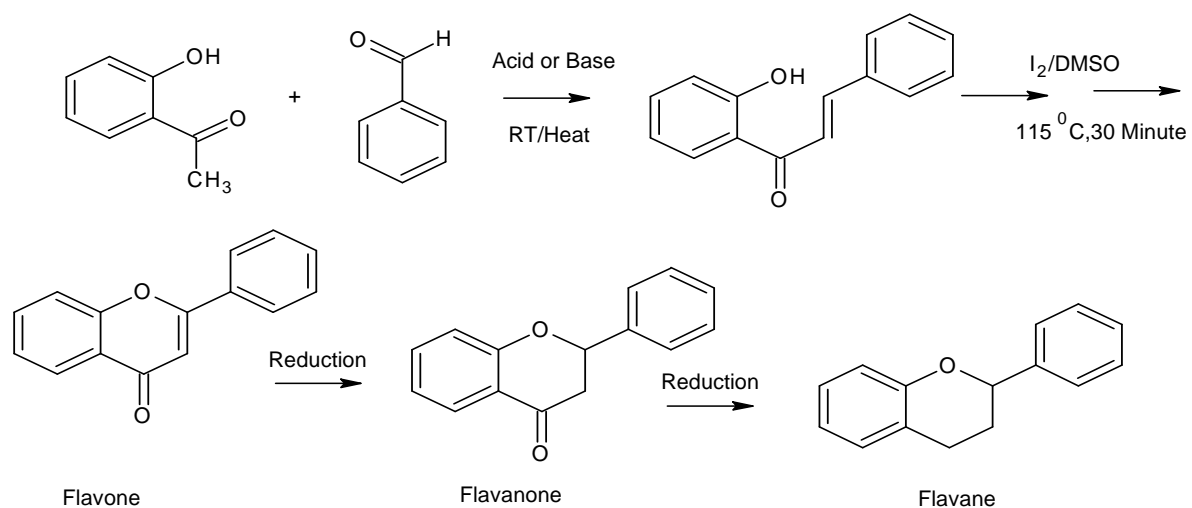
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**KEYWORDS:** Orthohydroxy Acetophenones, chalcones, flavone, flavanones etc.

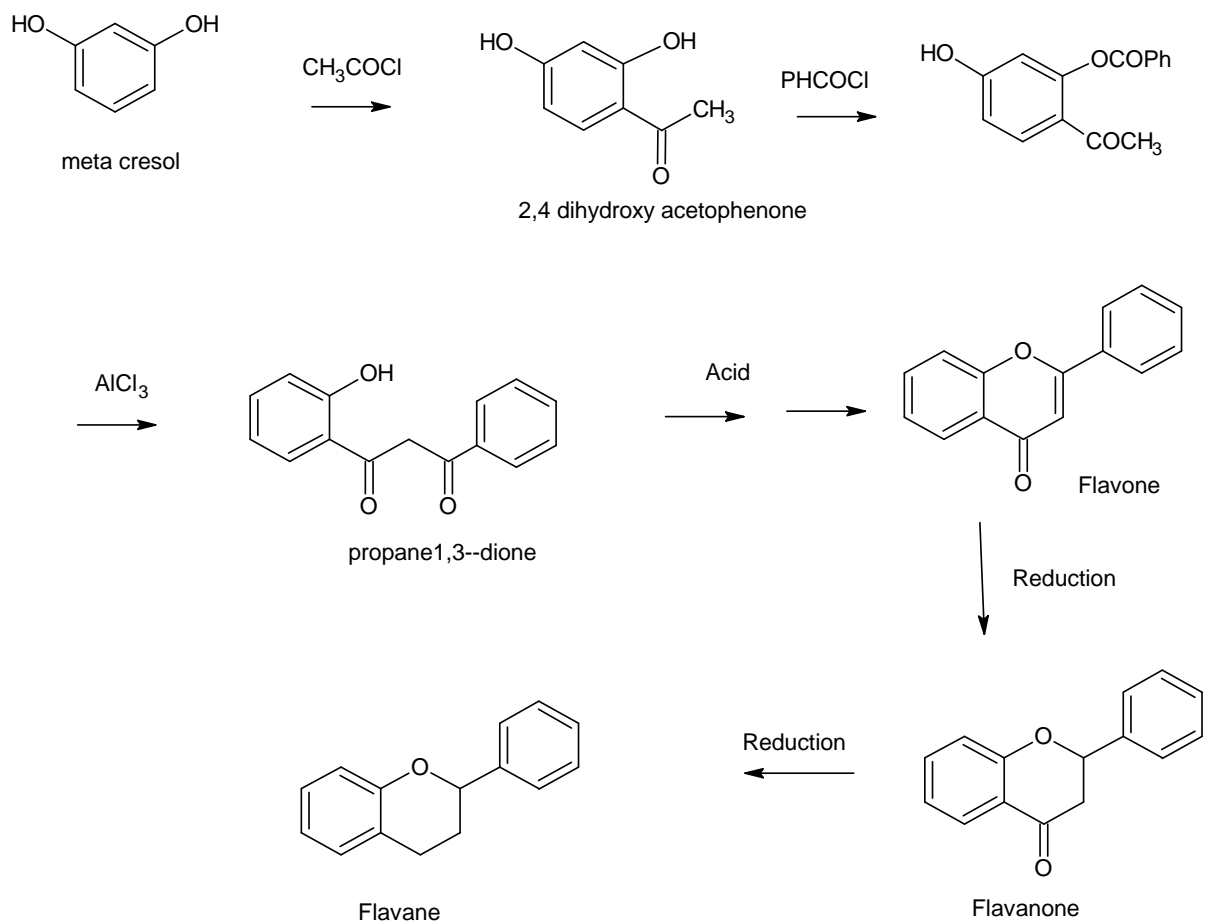
**INTRODUCTION:** Flavonoids are naturally occurring compounds as secondary metabolites in plants functions as physiological survival of plant from by protecting it from fungal infections and UV radiations. In addition involved in photosensitisation, energy transfer, photosynthesis, respiration, and morphogenesis and sex determination. They contains C6-C3-C6 skeleton with two oxygen atoms. The shikimic acid pathway is a major route for the synthesis of aromatic compounds in plants and microorganisms including protinaceous amino acids phenylalanine, tyrosine and tryptophan. Flavonoids are synthesised via phenylpropanoid pathway. Phenylalanine, tyrosine and tryptophan are the primary metabolites, which serve as a precursor for many natural (secondary) products such as flavonoids, phenolic acids, Coumarins, alkaloids, glycosilonates and cynogenic glycosides. Most secondary metabolites with diverse antibiotic activity were synthesised through the shikimic acid pathway. Although melanic acid pathway is also involved in the biosynthesis of some of these compounds (flavonoids).The first key step in the shikimic acid pathway s condensation of erythrose-4-phosphate from pentose phosphate pathway. Phenylalanine ammonia lyase is the important enzyme in the synthesis of flavonoid compounds. Flavonoids are classified a Flavone, flavanone, flavonol, Flavane, iso and neo of the same, anthocynidine and bioflavonoid. Flavonoids are used in the areas of infectious diseases including resistant bacterial infections, tuberculosis, opportunistic infections, viral infections, fungal infections, parasitic infections and various aspects of cancer. They are also a kind of natural product and antioxidant substances capable of scavenging free superoxide radicals, antiaging and reducing the risk of cancer. Secondary metabolites are chemicals produced by plants; and thier functions in growth, photosynthesis, reproduction and other primary processes are not known yet. Most pharmaceuticals are based on plant component structures; such as secondary metabolites enhance human immunity. Flavonoid constitute a wide range of substances that play important role in protecting biological systems against the harmful effects of oxidative processes on macromolecules, such as carbohydrate proteins, lipids and DNA.Other flavonoid groups are aurones,xanthones and condensed tannins. Most of flavonoid compounds, which are often accumulated in the vacuoles of plant cells, are glycosides and always O or C linked. The variant of flavonoid glycosides are based on number of positions on flavonoid for glycosylation and number of types of sugars

involved in glycosylation. Among various glycoses isolated from plants only eight are distributed widely. In addition, the most common flavonoid nuclei are kaempferol, Quercetin, rutin, catechin, epicatechin, myricetin, anthocyanidines and luteolin.

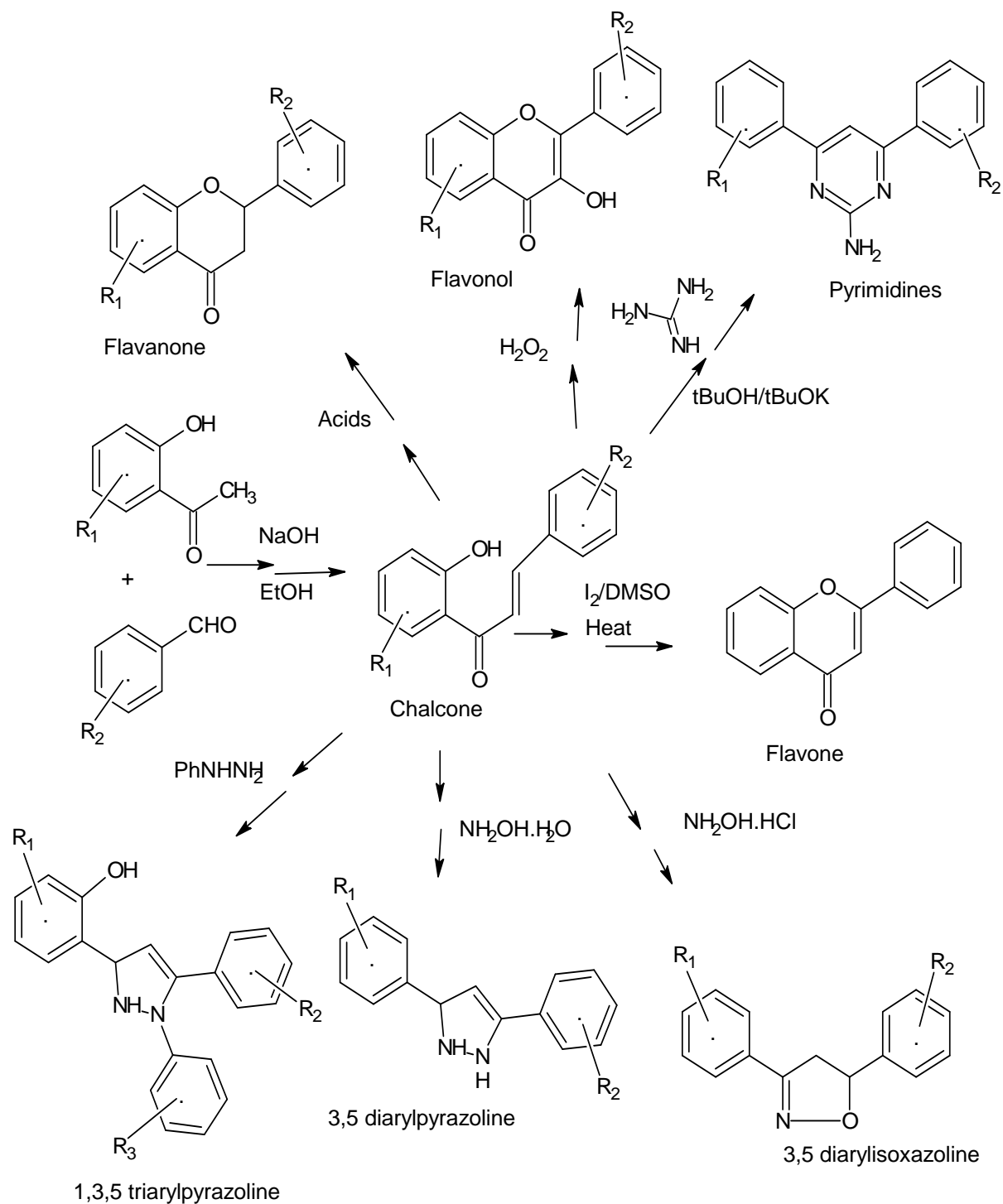
#### SCHEME 1- CLAISEN-SCHMIDT METHOD



#### SCHEME 2 - BAKER- VENKATRAMAN METHOD



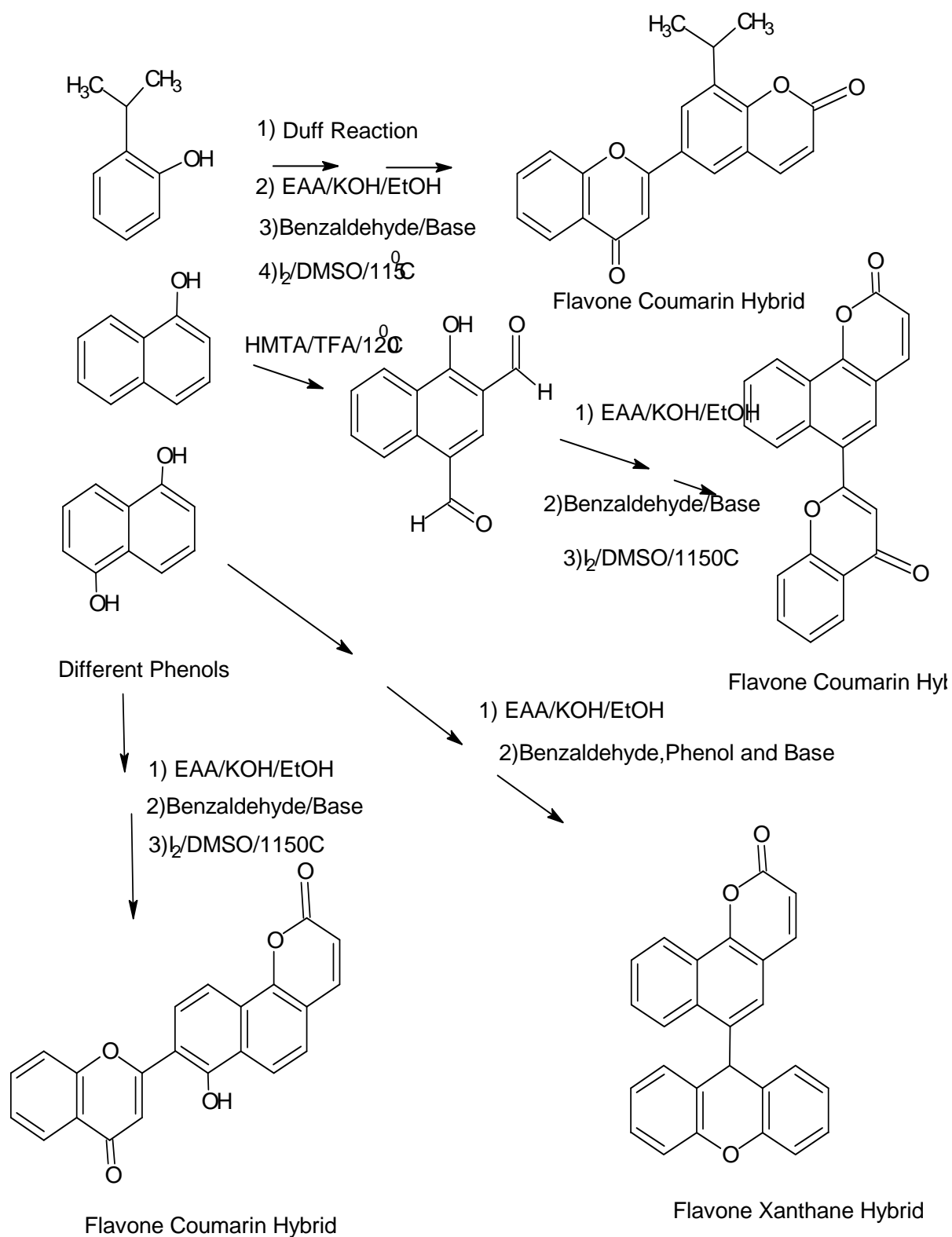
**SCHEME 3 - VARIOUS METHODS FOR ANALOGUE SYNTHESIS**



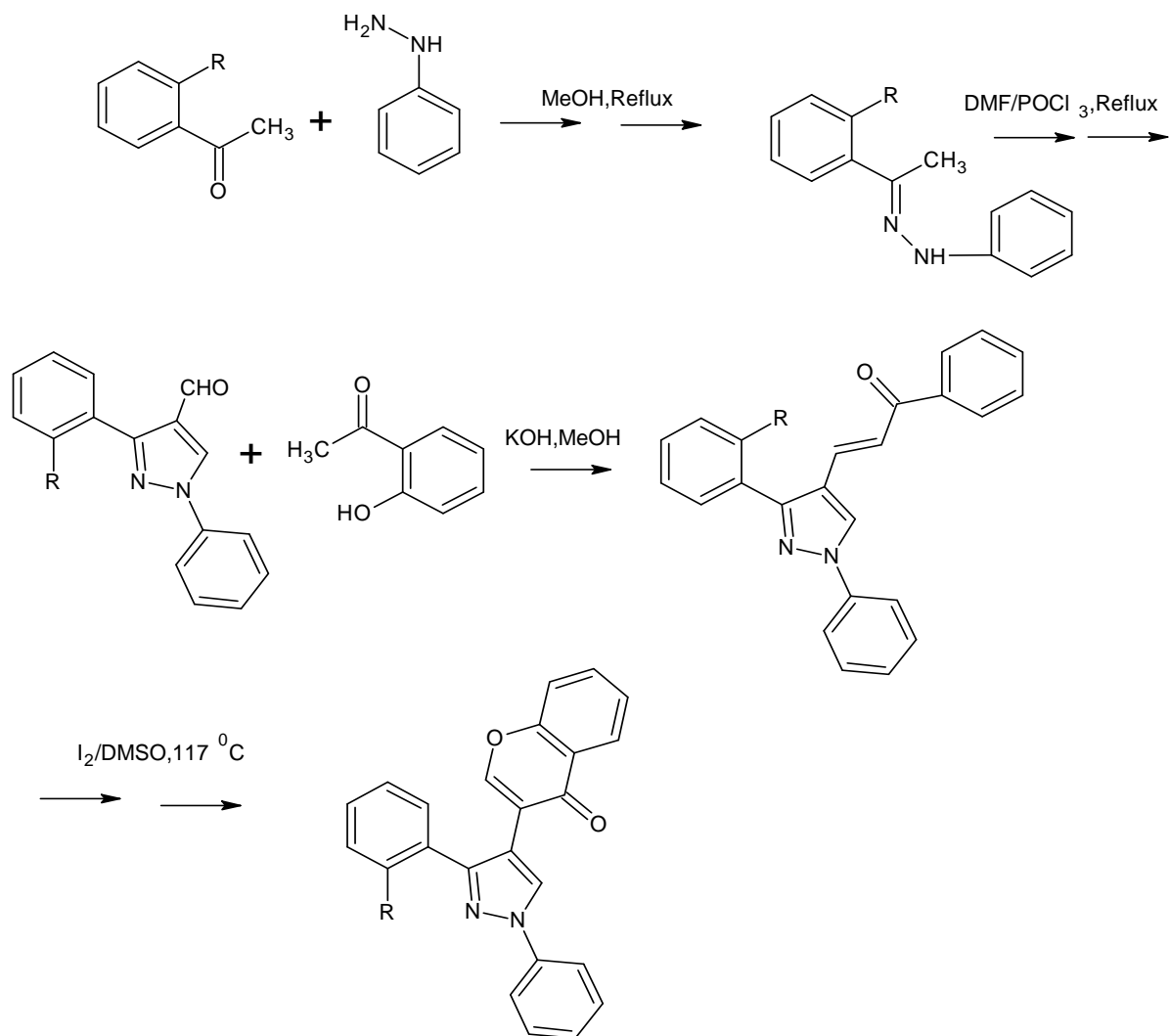
Where  $R_1$ ,  $R_2$  and  $R_3$

is OH, NO<sub>2</sub>, F, Cl, Br, I, NH<sub>2</sub>, Me, Et, Alkyl, CHO, COOEt, COOR and aroatic or aliphatic or alicyclic or heteroc

**SCHEME 4- FOR SYNTHESIS OF HYBRID MOLECULES**



**SCHEME:-5**



## EXPERIMENTAL METHODS:

Aldehydes and ketone treated as per procedure to give intermediate chalcone from which various analogues are synthesised by simple lab scale and thermal method. Process optimisation to increase yield. Some new catalyst, molar ratio, solvent, change in physical factor like time, temperature etc.

**CONCLUSION:** Flavonoid derivatives are synthesised by novel methods and their biological activities are tested against various bacterial and fungal stains. They show better activities against the bacteria and viruses.

**OBJECTIVES:** The object of research was to design effective drug analogues against various diseases and check their bioactivity. Development of new methodology, which is cheap and short route. Synthesis of some hybrid molecules and prodrugs to enhance activity of existing drug molecules against bacteria, viruses and fungi

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