



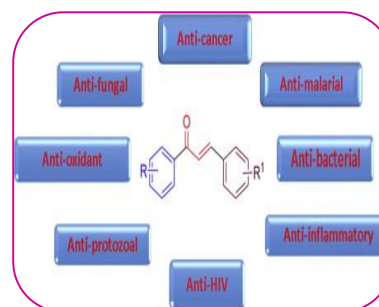
CHALCONES AND THEIR PHARMACOLOGICAL ACTIVITIES: REVIEW

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ABSTRACT

Chemically chalcones are derivatives of 1,3 diphenyl prop-2-en-1-one. In many medicinal herbs chalcones are found to be active ingredient. Chemical investigation of the plants results in isolation of chalcones. Chalcone isolated from plants shows complex structures which are not easy to recognize. The structure variation in chalcone is cause of its diverse pharmacological activities. In addition to medicinal use chalcones can be used for synthesis of pyrazoline pymidinone benzazapine by using binucleophilic species.



KEY WORDS: Chalcone, pharmacological activity, antioxidant, antibacterial.

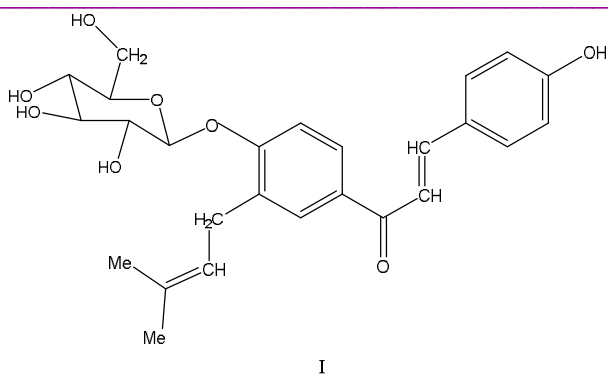
INTRODUCTION :

In this modern world due to changed lifestyle , pollution , use of fast food , use of pesticides and insecticides for crop production , hybrid variety of crops and lack of tendency of exercise results in different diseases and disorders in people. For good health it is necessary to remain fit or if infected to cure the disease. Medicines are almost unavoidable in today's lifestyle. Nature has given medicines in the form of plant products. If the method of isolation of medicine is economically not profitable, it becomes necessary to synthesize it artificially. Heterocyclic compounds of oxygen, nitrogen, and Sulphur are stable and show various biological activities. It contains chalcones, flavones, chromones, styryl chromones etc. Chemically chalcones contain ketoethylenic bridge having two aromatic rings. Different substitutions in both rings by methyl, methoxy, halogen, hydroxyl, nitro group results in biological activity. The type, position and number these group in rings is cause of diverse pharmacological activities of chalcones.

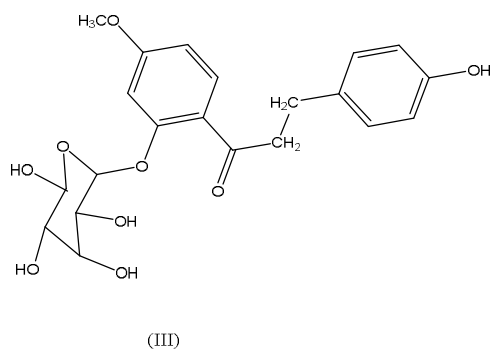
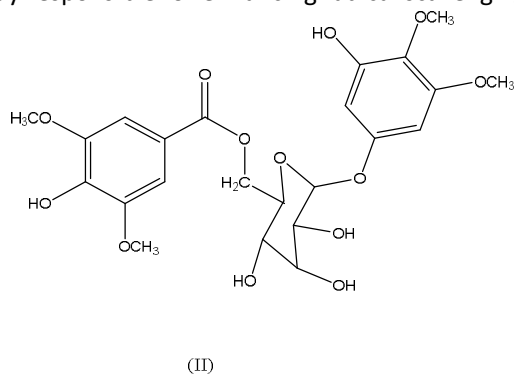
ANTIOXIDANT ACTIVITY:

Excess of free radical in body damage the cells, proteins and may results in different diseases and disorder. Substance belaying or inhibiting the oxidative damage to target molecule is called antioxidant. Some fruits like red grapes, guava, and mango contain antioxidants.

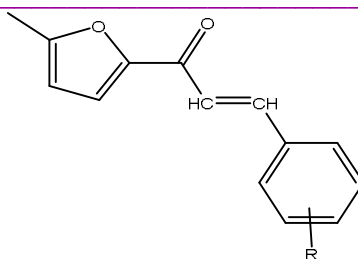
Cioffi. et al¹ isolate four different chalcones from stem bank of maclura tintoria using methanol for extraction. Chalcone (I) was found to be most active among them.



Eight dihydrochalcones were isolated from the roots of *Anneslea fragrans* var. *lanceolata* by Huang et al.² From investigation it was observed that chalcone (II) and (III) showed weak DPPH radical scavenging activity. 2, 6 hydroxy groups may be responsible for enhancing radical scavenging activity of chalcone (xii)

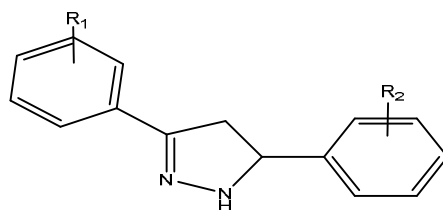


Many researchers reported that antioxidant and antimicrobial activities are shown by allylic³ substituted and pyrazolic chalcones. Ahmed et al synthesized chalcones from 2 acetyl 5 methyl furan and substituted benzaldehydes using different methods. Five derivatives of (IV) with different R exhibited very low antioxidant activity.



(IV)

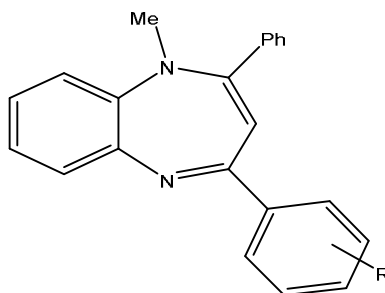
Doan & tran⁴ synthesized allylic chalcones and pyrazolic chalcones & tested for antioxidant activity. The results revealed that pyrazole chalcone (V) with different R₁ & R₂ groups have comparable antioxidant activity with ascorbic acid.



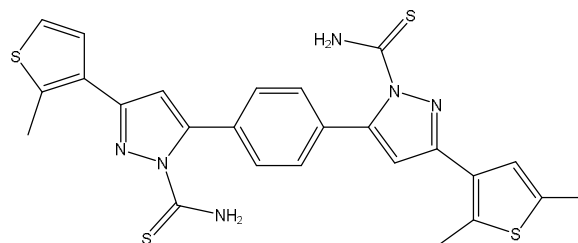
(V)

ANTIBACTERIAL ACTIVITY:

Bhatia et. al.⁵ synthesized 2,4 disubstituted 1,5 benzodiazepine (VI). By using benzaldehyde, substituted acetophenone and ortho-amino aniline. This compound showed antibacterial activity.

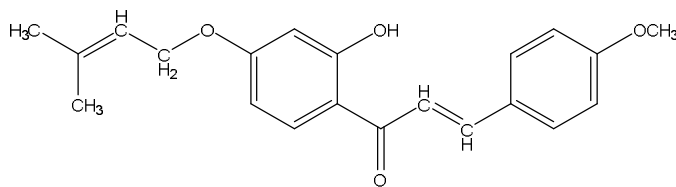


(VI)



(VII)

Asiri & Khan⁶ prepared bischalcones by using substituted thiophene and terephthalate. This bischalcone was derivatized into four derivatives. Compound (VII) exhibited better antibacterial activity than chloramphenicol drug.

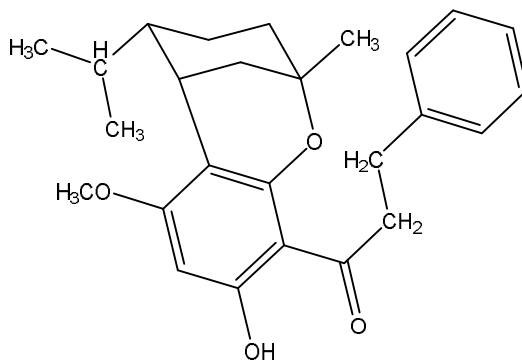


(VIII)

Prenyloxy chalcone (VIII) synthesized by Bhaskar and Reddy⁷ showed comparable antibacterial activity with streptomycin. Against E-coli & S.aureas, Shah et. al.⁸, Patel and Patel⁹ have prepared chalcones having antibacterial activity.

ANTIPLASMODIAL ACTIVITY

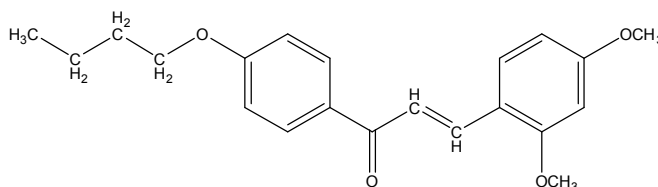
Malarial parasite showed resistance to chloroquine so natural products & synthetic derivatives are investigated to treat malaria. Portet et al.¹⁰ isolated chalcone (IX) from leaves of *Piper hostaannianum* var. *beribicense* showed activity against *Plasmodium falciparum*.



(IX)

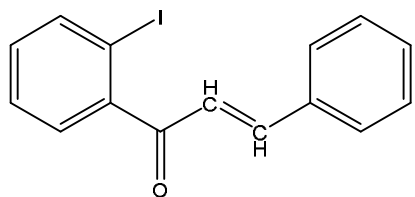
Chalcones containing alkoxy groups in both rings such as 2,4-dimethoxy-4'-hydroxy chalcone (X) showed better activity against *Plasmodium falciparum* in vitro¹¹.

Antidiabetic chalcones:

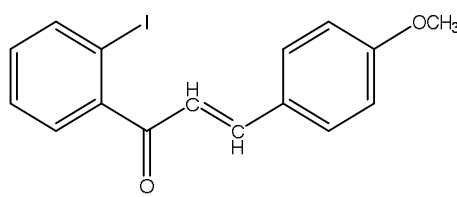


(X)

Hsich et.al.¹² synthesized novel chalcone by reacting halo substituted benzaldehydes with acetophenone using KOH & ethanol.



(XI)



(XII)

Seven derivatives were synthesized showed better glucose consumption ability than rosiglitazone and pioglitazone chalcone (XI) & (XII) showed better antidiabetic activity.

CONCLUSION:

Chalcone present in different plant parts in good quantity. By using different routes number of chalcones derivatives is prepared. Investigation of these compounds indicates better pharmacological activities. Chalcones are found to be useful in conditions like cancer, influenza viruses and also act as tyrosine inhibitor, lipid lowering agent. These pharmacological activities are observed in vitrotests. It is necessary to test these compounds in human clinical trials. No doubt there are some compounds which are already widely used having best potential.

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