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SYNTHESIS OF SOME NOVEL CHALCONES DERIVED FROM P-CRESOL AND AROMATIC ALDEHYDES

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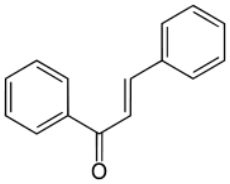
ABSTRACT
Chalcones are biologically active compounds belongs to flavonoids family. This paper describes the synthesis of some chalcones from 2-hydroxy -5-methyl acetophenone. The synthesis was based on stirring 2-hydroxy -5-methyl acetophenone with aromatic aldehydes. The entire chalcone compounds were confirmed by melting point and FT-IR spectroscopy.

KEYWORDS: Aromatic aldehydes, 2-hydroxy-5-methylacetophenone, chalcones, FT-IR spectra.

INTRODUCTION
Chalcones are α,β-unsaturated ketones which is an important class of naturally occurring flavonoids.[1] Chalcones are the precursor for the synthesis of flavonoids and isoflavonoids which are present in natural compounds.[2] Structure of chalcone containing two aromatic benzene rings which are linked by an aliphatic three carbon atoms chain as shown below.[3]



Naturally chalcones are distributed in vegetables, fruits, tea and spices. The synthetic chalcones can be synthesized by condensation of acetophenone and aromatic aldehydes.[4] Chalcones are biological active compounds having various biological activities such as anticancer[5],cytotoxic,antioxidant.[6] anti-inflammatory, antiviral, antimalarial, antimicrobial, antitumor, anticonvulsant, antifungal, antipyretic and antidepressant.[7-11]

In the present study three novel chalcones were synthesized by condensation of 2-hydroxy -5-methyl acetophenone with aromatic aldehydes (3,4-dimethoxybenzaldehyde,p-chlorobenzaldehyde and 2-nitrobenzaldehyde).

METHODS AND MATERIALS
Synthesis of 2-hydroxy-5-methyl acetophenone (I)
P-cresyl acetate was obtained from p-cresol by acetylation. Then p-cresyl acetate was mixed with anhydrous $AlCl_3$ and heated at 120°C for 45min in oil bath to obtained 2-hydroxy-5-methyl acetophenone (I). **m.p.56°C.**

Synthesis of Chalcones (3a-3c)
Compound (1) (0.01mol) was added separately to aromatic aldehydes (2a, 2b and 2c) (0.01mol).The reaction mixture was stirred for 2 hours and kept overnight at room temperature. Then it was poured in crushed ice and then acidified with dilute HCl. The crude precipitate obtained, washed, filtered and re-crystallized from ethanol.

RESULT AND DISCUSSION
The synthesized chalcones were characterized by by IR spectra.

3-(3,4-dimethoxyphenyl)-1-(2-hydroxy-5-methylphenyl)-prop-2-ene-1-one (3a).
IR (KBr) cm^{-1}: This compound displays following signals, 2927.34cm^{-1}(Ar-C-H-Str.), 3400cm^{-1} (-OH-Str.), 1635. 64cm^{-1}(-C=O-Str.), 1560.41cm^{-1}(-C=C-Str.), 561.29, 466.77cm^{-1}(-Ar-C-H-Bending.), 1186.22, 1263.37cm^{-1} (-C-O-Str.), 2843.07cm^{-1}(-O-CH_3-Str.).

3-(4-chlorophenyl)-1-(2-hydroxy-5-methylphenyl)-prop-2-ene-1-one (3b).
IR (KBr)cm^{-1}: The signals appeared at,2918cm^{-1}(Ar-C-H-Str.),3400cm^{-1}(-OH-Str.),1645.28cm^{-1} (-C=O-Str.), 1573.91cm^{-1}(-C=C-Str.),806.25cm^{-1}(-Ar-C-H-Bending.),700cm^{-1}(-C-Cl-Str.).

3-(2-nitrophenyl)-1-(2-hydroxy-5-methylphenyl)-prop-2-ene-1-one (3c).

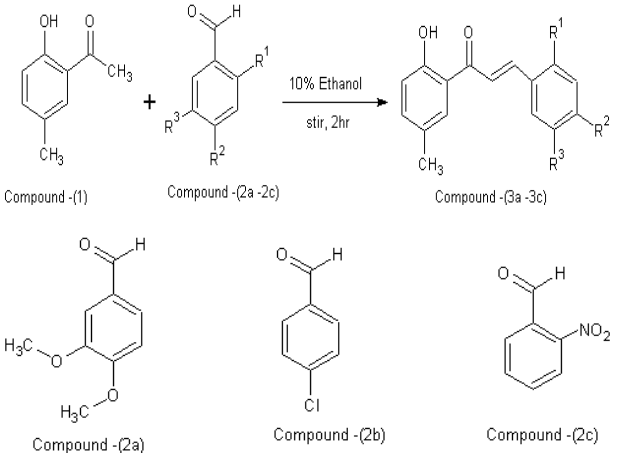
IR (KBr)cm^{-1}: The signals appeared at,2918 cm^{-1}(Ar-C-H-Str.),3115.04cm^{-1}(-OH-Str.),1612cm^{-1} (-C=O-Str.), 1560.41cm^{-1}(-C=C-Str.),894,808,750,680cm^{-1}(-Ar-C-H-Bending.),1288,1230,1130cm^{-1} (-C-O-Str.),1487.12 cm^{-1}(-NO_2-Str.).

The stretching frequency of ketone functional group should observed in the region of (1715-1725cm^{-1}) but observed in the region of (1612-1645-28cm^{-1}) which may be attributed due to the presence of conjugation in the synthesized chalcones. The melting points of the chalcones (3a-3c) were shown in table no-1.

Table 1: Substituents and melting points.

Compound	R^1	R^2	R^3	*M.P. (^{o}C)*
3a	-H	-OCH_3	-OCH_3	140
3b	-H	-Cl	-H	142
3c	-NO_2	-H	-H	164

Scheme of reaction



CONCLUSION

The synthesis of chalcones are based on 2-hydroxy-5-methyl acetophenone as an intermediate was undertaken The synthesized compounds shown good agreement with the FT-IR data. The synthesized chalcones may have future scope for synthesis of novel compounds like isoxazoline, pyrazoline etc.

REFERENCES

1. Rao M V, Zha A , Rao V and Prasad C H, Synthesis, characterization and biological evaluation of some new chalcones and 2-pyrazolines as potential cytotoxic agents, J Pharma Res, 2014; 8(60): 850-857.
2. Alarcon E,Romeo N, Aguilar H, Teran J L, Gomez A Rao Lf, Carlos E, Lobato C E and Escobar A, Green synthesis of chalcone derivatives of acetophenone, Conference, an Int Event Barcelone – Spain, 2013.
3. Ali M F, and Khlafulla A M, Friendly and efficient synthesis of chalcone derivatives under solvent free condition, Res and Review: J Pharmacology, 2016; 6(1): 1-8.
4. Borge V V and Patil R M, Synthesis and Characterization of some substituted chalcones, Ind J Res, 2018; 7(1): 63-64.
5. Shyam S Abdelweb S I, Al-Mamary M A and Mohan S, Synthesis of chalcone with anticancer activities, Molecules, 2012; 17: 6179-6195.
6. Ahmed M R, Sastry V G,Bano N, Ravichandra S and Raghuvendra M, Synthesis and cytotoxic, antioxidant activities of new chalcone derivatives Rasayan J Chem, 2011; 4(2): 289-294.
7. Kakade K P,Kakade S P and Deshmukh S Y, Synthesis and characterization of some bromo substituted chalcones by the green synthsis way and aurones 2-benzylidine-1-benzofuran-3-one by cyclisation method, World J Pharm and Pharma Sci, 2015; 4(1): 1591-1597.
8. Erdogan T,The first synthesis of novel 4-chloro chalcone based oxime ether ,an experimental and computational study ,J Natural and applied Sci, 2016; 20(3): 475-489.
9. Talavera V,Bodke Y D, Kenchappa R and Telkar S, Synthesis ,antimicrobial and antioxidant activities of chalcone derivatives containing thiobarbitone nucleus ,Medicinal Chem, an open access J , 2016; 6(7): 440-448.
10. Kateb B A, Hussien A A and Baseer M A,Microwave assisted efficient synthesis of ortho hydroxy chalcones as probes for biological activities, Int J Pharm and Pharma Res, 2016; 6(1): 210-227.
11. Suvito H, Jumina, Mustafa, Kristanti A N and Puspaningsih N T, Chalcones: Synthesis, diversity and pharmacological aspects, J Chem and Pharma Res, 2014; 65(1): 1076-1088.