SYNTHESES AND CHARACTERIZATION OF SOME SUBSTITUTED CHALCONES

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ABSTRACT
The present work deals with some novel substituted chalcones prepared from 2-hydroxy-4,5-dimethyl acetophenone and aromatic aldehydes like benzaldehyde, 4-hydroxy benzaldehyde, 4-nitro benzaldehyde and 3-chloro benzaldehyde in alkaline medium at room temperature which yields corresponding chalcones. The structure of synthesized chalcones were elucidated by spectroscopic techniques like IR, Mass, Physical Constant, 1H-NMR, UV and Elemental Analysis. The chemicals 2-hydroxy-4,5-dimethyl acetophenone, benzaldehyde, 4-hydroxy benzaldehyde, 4-nitro benzaldehyde, 3-chloro benzaldehyde, hydrochloric acid, sodium hydroxide, ethyl alcohol, ethyl acetate, n-hexane, methanol, chloroform, DMSO etc. used during the work were of AR Grade. Doubled distilled water was used throughout the work.

Experimental:
Synthesis of 2-Hydroxy-4,5-dimethyl acetoephone: A mixture of anhydrous aluminium chloride and 3,4-dimethyl phenyl acetate was heated for 3 hours and then cooled at room temperature (Fig.1). The AlCl₃ decomposed by adding mixture of ethanol were warmed in a 50 ml conical flask and shaken occasionally. The mixture stirred till completion of the reaction (progress of reaction checked by TLC). The mixture acidified with 10% hydrochloric acid then filtered by using suction pump, washed with cold water and crystallized by ethanol. The yield of the yellow coloured product was more than 60% (Fig.2).

Result and Discussions:
1. 3-phenyl-1-(2-hydroxy-4, 5-dimethyl phenyl)-prop-2-en-1-one (1a)
To a stirred mixture of 2-hydroxy-4,5-dimethyl (0.01mol) and benzaldehyde in ethanol (20ml), sodium hydroxide (0.5g) was added and treated as in general procedure to give (1a).

Molecular Formula: C₂₀H₁₆O₂; Formula Weight: 228 [M]+; Melting point: 135°C; Yield: 58%; Colour: Yellow powder; Solubility: methanol, ethyl acetate, chloroform, DMSO, ethyl acetate; IR (KBr) in cm⁻¹: 2921(-OH), 1640(C=O), 1503(C=C), 1410(=CH₂), 1322(C-O), 2858 (Ar C-H); H-NMR (400MHz) in CDCl₃: 2.00 (s, 3H, CH₃), 2.30 (s, 2H, =CH), 3.90 (s, 2H, =CH₂), 4.97 (s, 1H, OH, D₂O Exchangeable), 7.00 (d, 5H, Ar-H), 7.50 (s, 2H, =CH), 7.90 (s, 1H, =CH). UV (Bands λmax in nm) in methanol: 410.

2. 3-(4-Nitrophenyl)-1-(2-hydroxy-4, 5-dimethyl phenyl)-prop-2-en-1-one (1b)
To a stirred mixture of 2-hydroxy-4,5-dimethyl(0.01mol) and p-nitro benzaldehyde in ethanol(20ml), sodium hydroxide (0.5g) was added and treated as in general procedure to give (1b).

Molecular Formula: C₂₁H₁₅NO₃; Formula Weight: 344 [M]+; Melting point: 135°C; Yield: 58%; Colour: Yellow powder; Solubility: methanol, ethyl acetate, chloroform, DMSO, ethyl acetate; IR (KBr) in cm⁻¹: 3390(-OH), 1615(C=O), 1513(C=C), 1190(C-O)2921 (Ar C-H); H-NMR (400MHz) in CDCl₃: 2.00 (s, 3H, CH₃), 2.30 (s, 2H, =CH), 7.33-7.76(d, 4H, Ar-H), 6.56(s, 2H, =CH); UV (Bands λmax in nm) in methanol: 410.

3. 3-(4-Hydroxyphenyl)-1-(2-hydroxy-4, 5-dimethyl phenyl)-prop-2-en-1-one (1c)
To a stirred mixture of 2-hydroxy-4,5-dimethyl (0.01mol) and p-hydroxy benzaldehyde in ethanol (20ml), sodium hydroxide (0.5g) was added and treated as in general procedure to give (1c).

Molecular Formula: C₂₁H₁₅NO₃; Formula Weight: 344 [M]+; Melting point:105°C; Yield: 51%; Colour: Brown
powder; Solubility: methanol, ethanol, chloroform, DMSO, ethyl acetate; IR (KBr) in cm⁻¹: 3242(OH), 1639(C=O), 1588(C=C),
1221(C-O), 2987 (Ar C-H) ; H-NMR (400MHz in CDCl₃): δ 4.96 (s, 1H, OH, D O Exchangeable), 2.22(s, 3H, CH₃), 2.59(s, 2H, CH₂),
7.57-7.60(d, 4H, Ar-H), 6.58-6.70(s, 2H, =CH); UV (Bands λmax in nm) in methanol: 380.

4. 3-(3-Chlorophenyl)-1-(2-hydroxy-4, 5-dimethyl phenyl)-prop-2-en-1-one: (1d)
To a stirred mixture of 2-hydroxy-4,5-dimethyl (0.01mol) and m-chloro benzaldehyde in ethanol (20ml), sodium hydroxide (0.5g)
was added and treated as in general procedure to give (1d).

Molecular Formula: C₁₇H₁₄O₂Cl; Formula Weight: 286.5; MS m/z(%): 287[M⁺]; Melting point:110°C; Yield: 56%; Colour: Yellow powder; Solubility: methanol, ethanol, chloroform, DMSO, ethyl acetate; IR (KBr) in cm⁻¹: 3527(OH), 1635(C=O), 1567(C=C),
1185(C-O) 2920 (Ar C-H); H-NMR (400MHz in CDCl₃): δ 4.91(s, 1H, OH, D O Exchangeable), 1.90 (s, 3H, CH₃), 2.29(s, 2H, CH₂),
7.32-7.54(m, 4H, Ar-H), 6.712(s, 2H, =CH); UV (Bands λmax in nm) in methanol: 420.

Conclusions:
The synthesized Chalcone compounds were characterized by T.L.C., Mass, IR, NMR Spectroscopy and Elemental Analysis. The
results obtained from this study confirmed that the product has formed. Further, viewing these properties many different
complexes can be synthesized and subjected to pharmacological studies. These Chalcone derivative complexes may have catalytic
property as well as a variety of biological activities.

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