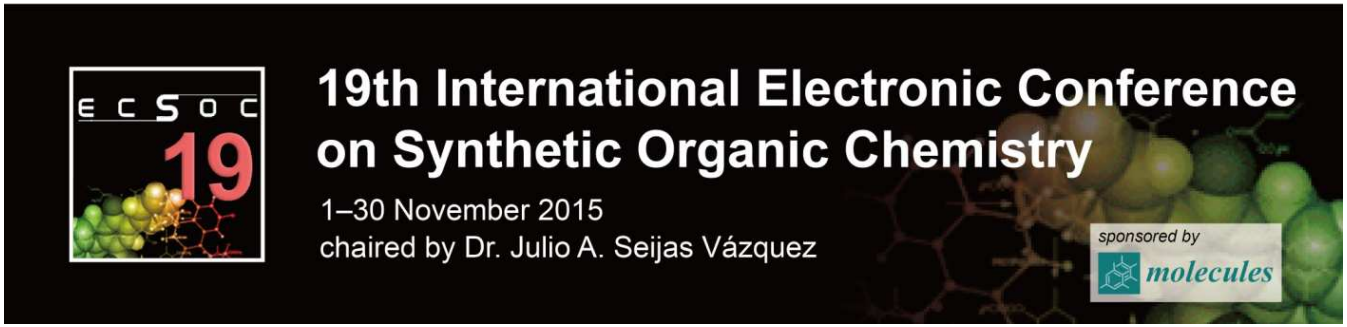

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SYNTHESIS OF 1, 3 – DIKETOKETONES AS A NOVEL ANTIMICROBIAL, ANTIFUNGAL AND ANTIOXIDANTS AGENTS

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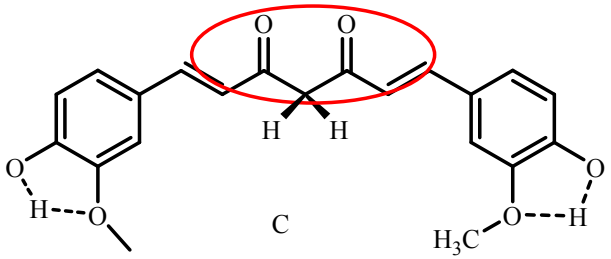
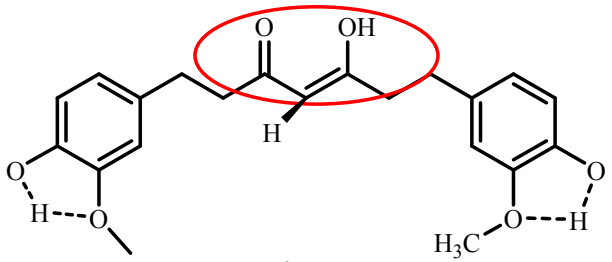


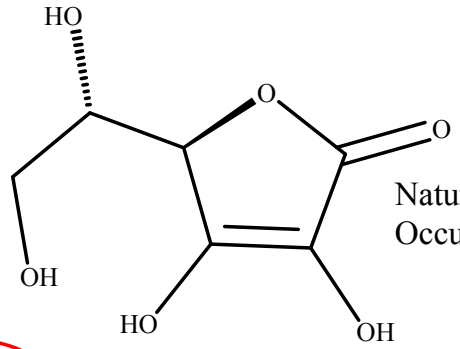
C

Active
reported



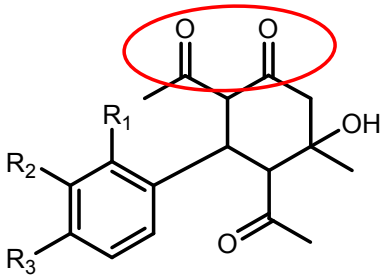
Active

B



Naturally
Occuring Active

D

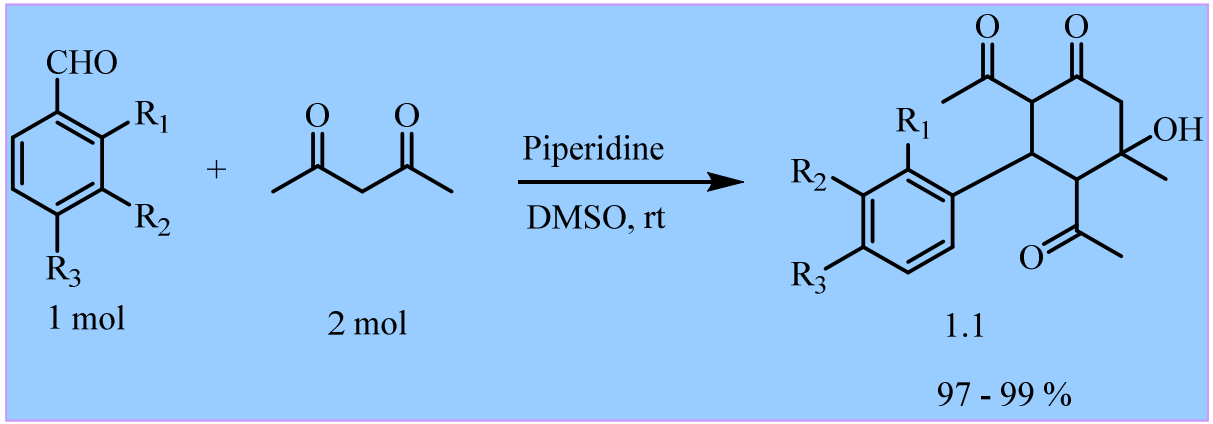


New report

A

Cyclohexanone derivatives A having 1,3-diketone moietyB,C,D 1,3diketone have prominent antioxidant activity naturally occurring

Scheme1: Synthesis of 2,4-diacetyl-5-hydroxy-5-methyl-3-phenylcyclohexanone derivatives.



1) R_1 = H R_2 = H R_3 = H, 2) R_1= H R_2 = H R_3 = Cl, 3) R1 = H R2 = H R3 =Br, 4) R_1 = H R_2 = H R_3 = OMe, 5) R_1= NO_2 R_2 = H R_3 = H, 6) R_1= H R_2 = H R_3 = NO_2, 7) R_1 = F R_2 = H R_3 = H, 8) R_1= Cl R_2 = Cl R_3 = H, 9) R_1 = Br R_2 = H R_3 = H, 10) R_1 = H R_2 = NO_2 R_3 = H. 11) R_1 = H R_2 = OMe R_3 = OMe, 12) R_1 = H R_2 = H R_3 = CH_3

Acetyl acetone 6.07 ml (59.0 mmol), aldehyde 3.0 ml (29.5 mmol) in DMSO 5.0 ml, piperidine 0.583 ml (5.9 mmol) was added, and the reaction mixture was magnetically stirred at ambient temperature. The stirring continued for 5 h the progress of the reaction checked by TLC, after completion of the reaction, the reaction mixture acidified with dil. HCl, quenched into ice cold water, washed with water to afford the pure solid product. Yield: 87 %).

Antimicrobial Evaluation

An evaluation of the antibacterial activity was done using two Gram-positive, *Bacillus subtilis* (NCIM 2079), *Staphylococcus aureus* (NCIM 2063), and one Gram negative *Escherichia coli (NCIM 2931)* and antifungal *Candida albicans* (NCIM 2091) species, which were collected by Indian Drugs Research Association, Pune (India) from National Chemical Laboratory (NCL) Pune and was assessed for the synthesized cyclohexanone derivatives compounds by well diffusion method.

Table N01. Antimicrobial activity and their MIC value.

Sample No	**Antimicrobial activity**			**Antifungal**
Organism	***B. subtilis***	***S. aureus***	***E.Coli***	***C albicans***
1	**250 PPM**	**500 PPM**	**125 ppm**	**NA**
2	**250PPM**	**500PPM**	**250 ppm**	**ACTIVE**
3	**125 PPM**	**NA**	**250ppm**	**NA**
4	**125PPM**	**250PPM**	**100ppm**	**NA**
Ampicillin	**50 PPM**	**100PPM**	**100 PPM**	**100PPM**

Antioxidant Activity:

FRAP mg/g Ascorbic acid equivalent	ABTS % Inhibition	DPPH % Inhibition
0.26±0.04	18.64±4.41	14.28±4.65
0.46±0.03	31.63±8.28	27.97±8.72
0.42±0.02	53.38±10.59	50.89±11.16
0.26±0.02	40.39±11.46	37.20±12.08
0.90±0.11	11.58±3.28	6.84±3.46
0.23±0.01	13.84±2.49	9.22±2.62
0.34±0.06	35.59±4.79	32.14±5.05
0.36±0.10	28.81±3.21	48.51±8.84
2.10±0.11	60.45±4.98	58.33±5.25
1.33±0.14	42.65±7.38	16.66±9.42
2.48±0.30	66.94±7.85	57.14±4.07
1.60±0.20	57.06±8.14	49.40±6.93

Table no.2 Antioxidant activities (FRAP, ABTS and DPPH) of organic compounds. The given values are in triplicates

Antioxidant Activity:

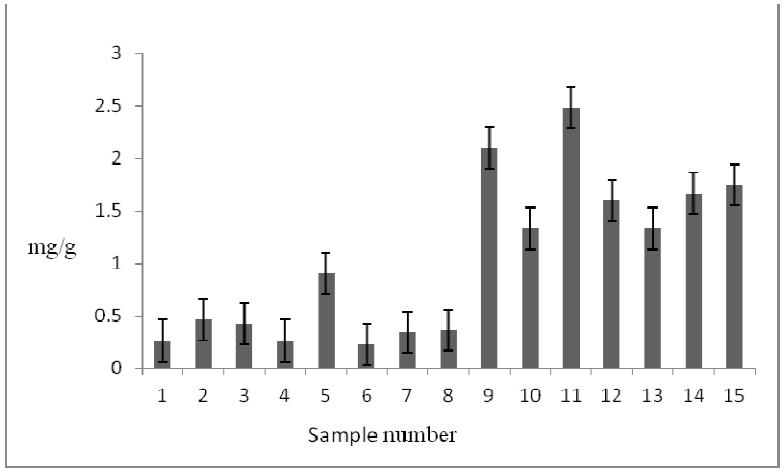


Figure No. 1 Total antioxidant activity of organic compounds by using FRAPS ferric reducing activity. The values taken are in triplicate basis.

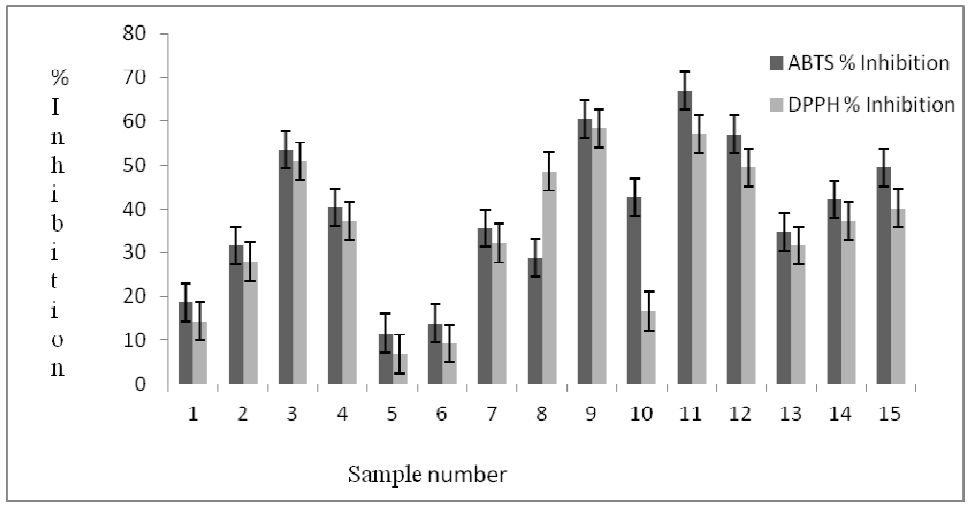


Figure No. 2 ABTS and DPPH of radical scavenging activity of organic samples. The given values are in triplicates

X-ray Data Collection, Structure Solution, and Refinement

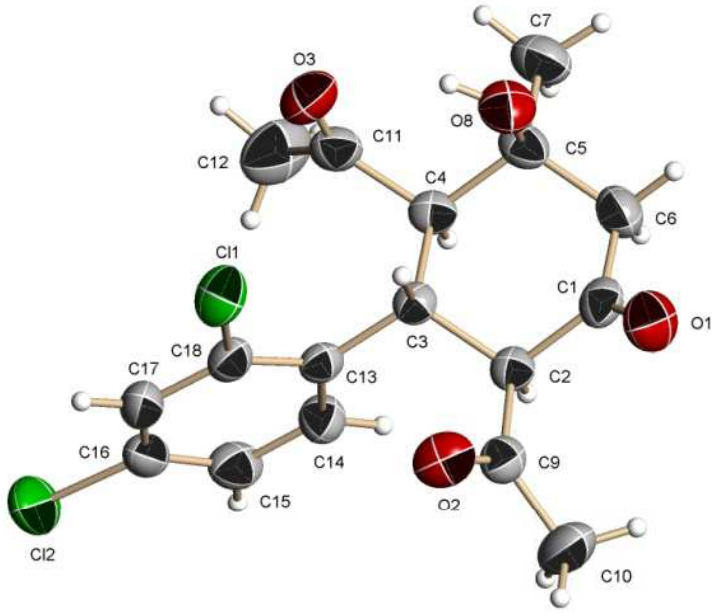


Figure1. Molecular structure of 4-diacetyl-3-(2,3-dichlorophenyl)-5-hydroxy-5- methyl cyclohexanone. Displacement ellipsoids are shown at the 50% probability level.

Full crystallographic data (excluding structure factors) have been deposited with the Cambridge CrystallographicData Centre as supplementary publication no. **CCDC-658606**. Copies of the data can be obtained free of charge on application to CCDC, 12 Union Road, Cambridge CB2 1EZ, UK [fax: (þ44)1223-336-033; e-mail: deposit@ccdc.cam.ac.uk]

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2) BSR- UGC Fellowship, New Delhi

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