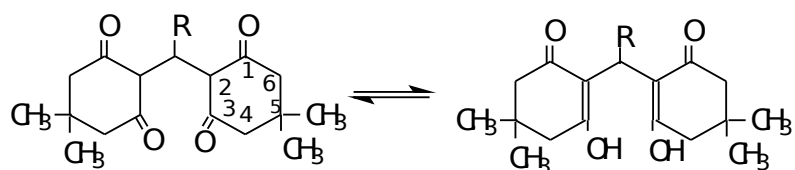
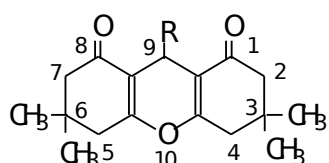


Table 2.1. a. Chemical names of the bisdimeone derivatives:



Comp.No	R	
II	- CH ₃	Bis-(1,3- diketo-5,5-dimethyl-2-cyclohexyl)-Ethane
IV	-CCl ₃	β,β Bis-(1,3- diketo-5,5-dimethyl-2-cyclohexyl)- α, α, α trichloro-ethane.
VI	-H	Bis-(1,3- diketo-5,5-dimethyl-2-cyclohexyl)- methane.
VIII	-CHO	α, α Bis-(1,3- diketo-5,5-dimethyl-2-cyclohexyl)- acetaldehyde.
X		Bis-(1,3- diketo-5,5-dimethyl-2-cyclohexyl)- methyl-benzene.
XII		o-(Bis-(1,3- diketo-5,5-dimethyl-2-cyclohexyl)-methyl-phenol.
XIV		P-(Bis-(1,3- diketo-5,5-dimethyl-2-cyclohexyl)-methyl-N,N-dimethyl-aniline
XVI		P-(bis-(1,3- diketo-5,5-dimethyl-2-cyclohexyl)-o- methoxy-phenol.
XVIII		2-(Bis -(1,3- diketo-5,5-dimethyl-2-cyclohexyl) -furan.

Table 2.1. b. Chemical names of the octahydro xanthene derivatives:





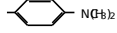


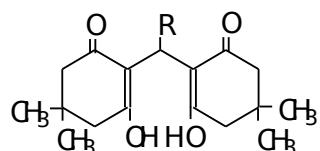
Comp.No.	R	
III	-CH ₃	3,3,6,6,9-pentamethyl-1,2,3,4,5,6,7,8-octahydro-xanthen-1,8-dione.
V	-CCl ₃	3,3,6,6-tetramethyl-9-trichloromethyl-1,2,3,4,5,6,7,8-octahydro-xanthen-1,8-dione
VII	-H	3,3,6,6-tetramethyl-1,2,3,4,5,6,7,8,9-octahydro-xanthen-1,8-dione
IX	-CHO	3,3,6,6-tetramethyl- 1,8-diketo-1,2,3,4,5,6,7,8-octahydro-xanthen- 9- aldehyde.
XI		3,3,6,6-tetramethyl-9- phenyl-1,2,3,4,5,6,7,8-octahydro-xanthen-1,8-dione.
XIII		3,3,6,6-tetramethyl-9- (O-hydroxy pheny) 1,2,3,4,5,6,7,8-octahydro-xanthen-1,8-dione.
XV		3,3,6,6-tetramethyl-9- (P- N,N-dimethyl amino-phenyl) 1,2,3,4,5,6,7,8-octahydro-xanthen-1,8-dione
XVII		3,3,6,6-tetramethyl-9- (P-hydroxy-m-methoxy phenyl) 1,2,3,4,5,6,7,8-octahydro-xanthen-1,8-dione
XIX		3,3,6,6-tetramethyl-9- furyl-1,2,3,4,5,6,7,8-octahydro-xanthen-1,8-dione

Table 2.2. a. Reaction conditions of the bisdimeedone derivatives:





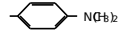


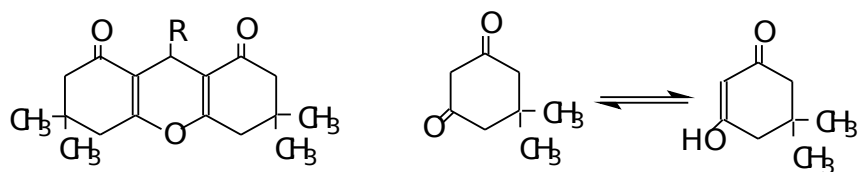
Compounds No.	R	Aldehyde used	reaction time/min.	recrystall solvent	yield %.	m.p °C
II	-CH ₃	Acetaldehyde	10	50%EtOH	55	170
IV	-CCl ₃	Chloral hydrate	10	MeOH	50	120
VI	-H	Formaldehyde	10	MeOH	95	196
VIII	-CHO	Glyoxal	10	MeOH	75	168
X		Benzaldehyde	15	MeOH	70	194
XII		Salicylaldehyde	15	50%EtOH	95	170
XIV		P-N,N-dimethyl amino benzaldehyde	15	MeOH	95	168
XVI		Vanillin	15	50% EtOH	85	130
XVIII		Furaldehyde	15	MeOH	80	145

Table 2.2. b. Reaction conditions of the octahydro xanthene derivatives:





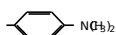


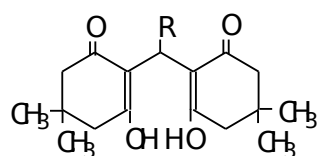
Comp. No.	R	Aldehyde used	reaction time/min.	Recrystall. solvent	yield %	m.p °C
III	-CH ₃	Acetaldehyde	10	EtOH	95	156
V	-CCl ₃	Chloral hydrate	10	MeOH	60	120
VII	-H	Formaldehyde	10	MeOH	90	196
IX	-CHO	Glyoxal	10	MeOH	95	138
XI		Benzaldehyde	15	MeOH	85	210
XIII		Salicylaldehyde	15	EtOH	80	194
XV		P-N,N-dimethyl amino benzaldehyde	15	MeOH	80	200
XVII		Vanillin	15	50% EtOH	80	230
XIX		Furaldehyde	15	MeOH	80	160

Table 2.3.a. I.R. data of the bisdimeone derivatives








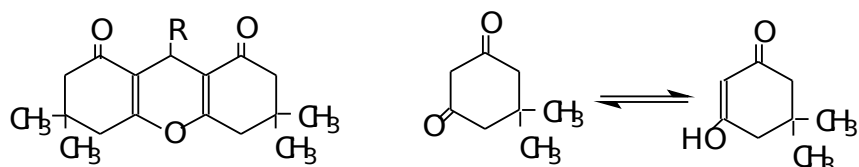
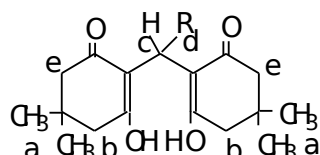
Comp. No	R	O-H st.vib	C-O st.vib	>C=O st.vib	C-H st.vib	C-H bend-CH ₃	C-H bend-CH ₂	C=C st.vib	Others
II	-CH ₃	3350-2600	1155	1560	2960, 2870	1370	1450	1610	
IV	-CCl ₃	3400-2400	1150	1570	2960, 2875	1375	1450	1620	
VI	-H	3500-3100	1150	1550	2960, 2870	1380	1450	1620	
VIII	-CHO	3350-2100	1151	1590	2961, 2875	1382	1456		1610, 2720 (CHO)
X		3400-2400	1165	1592	2962, 2877	1374	1450		
XII		3450-2500	1160	1590	2960, 2880	1375	1450		
XIV		3300-2400	1159	1594	2950	1370	1450		1520, ring, 811 P-sub.
XVI		3400-2200	1150, 1113	1589	2961, 2876	1380	1452	1640	747, 659
XVIII		3500-2600	1167	1620	2956, 2870	1376	1440		804

Table 2.3.b. I.R. data of the octahydro xanthene derivatives



Com p. No	R	O-H st.vib	C-O st.vib	>C=O st.vib	C-H st.vib	C-H bend-CH ₃	C-H bend-CH ₂	C=C st.vib	Others	
I	-	3500-2400	1160	1665		1380	1460			
V	-CCl ₃	-	1143	1654	2960, 2872	1379	1459			
VII	-H	-	-	-	-	-	-	-	-	-
IX	-CHO	-	1153	1607 (overlap)	2956, 2870	1373	1451		2700	
XI		-	1196	1664	2960, 2876	1360	1462	1623	800, 700	3025
XIII		3350-3090	1185, 1235	1622	2959, 2872	1378	1487		1577	764
XV		-	1197	1660	2958	1362	1465	1614	1517	832
XVI I		3450-3100	1272, 1196, 1141	1668	2959, 2875	1363	1461	1619	3023	1513, 757, 676

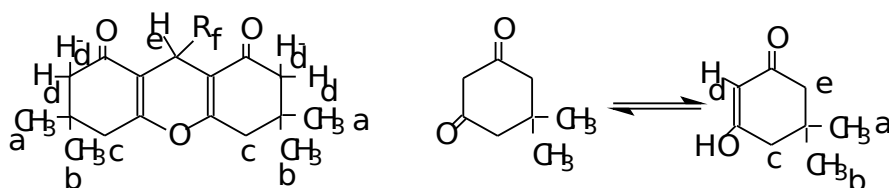
Table 2.4.a. ¹H-NMR data of the bisdimeedone derivatives.



Comp. No	R	chemical shift- δ -value-ppm-(intensity, multiplicity)				
		a	c	d	b	e
II	-CH ₃	1.10(12,S)	3.51(1,q,j=7.0 Hz)	1.03(3,d,j=6.5 Hz)	2.21(2,d,j=14.0 Hz) 2.28(2,d,j=14.5 Hz)	2.41(2,d,j=15.5 Hz) 2.48(2,d,j=15 Hz)
IV	CCl ₃	1.05(12,S)	5.30(1,S)	-	2.22(4,S)	2.57(2,s),2.29-2.39(2,m)
V1	-H	1.07(12,S)	3.15(2,S)		2.35(8,S)	
X		1.15(12,S)	5.52(1,S)	7.14-7.27(5,m)	2.41(8,S)	
X11		1.12(12,S)	5.32(1,S)	6.92-7.18(4,m)	2.38(8,S)	
XIV		1.15(12,S)	5.41(1,S)	6.65(2,d,j=1.0Hz) 6.95(2,d,j=1.0Hz) 2.83(6, s)	2.38(8,S)	
XVI		1.09(6,S);1.22(6,S)	5.53 (1,S)	6.58-7.85(3,m) 3.72(3,s); 12.1(1,bs)	2.43(8,m)	
XVIII		1.11(12,S)	5.62(1,S)	6.25-7.45(3,m)	2.38(4,S)	2.66(4,s)

S= singlet; d=doublet; t = triplet; q quartet, m = multiplet.

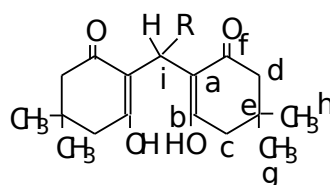
Table 2.4.b. ¹H-NMR data of the octahydro xanthene derivatives.



Com p. No.	R	chemical shift- δ -value-ppm-(intensity, multiplicity)						
		a	b	C	d	-	e	f
I	-	0.99 (3,S)	1.05 (3,S)	2.19(2,S)	3.32 (1,S)	-	2.55(2,S)	-
VII	-H	1:07(12,S)		2.35(8,S)			3.15(2,S)	
IX	-CHO	1.05(12,S)		2.29(5,S)+e	2.85 (2,m)	1.48(1,d,j= 11.0Hz) 1.30(1,d,j= 11.5Hz)	overlap (c)	out range
XI		0.98 (6,S)	1.10 (6,S)	2.53(2,d,j=1 4.5Hz) 2.60(2,d,j=1 4.0 Hz)	2.23(2,d, j=15.5 Hz)	2.12(2,d,j= 15.0Hz)	4.67 (1,S)	7.05-7.28 (5,S)
XV		0.98 (6,S)	1.10 (6,S)	2.58(2,d,j=1 6.5Hz) 2.51(2,d,j=1 6.0Hz)	2.24(2,d, j=17.0 Hz)	2.10(2d,j= 17.0Hz)	4.65 (1,S)	6.57(2,d,j =1.2Hz); 7.06 (2,d,j=1.1 Hz),2.81 (6,S)
XVII		0.98 (6,S)	1.10 (6,S)	2.58 (4,S)	2.22 (2,S)	2.15(2,S)	4.62 (1,S)	6.65-6.78 (3,m); 3.80 (3,S)

S= singlet; d=doublet; t = triplet; q quartet, m = multiplet.

Table 2.5.a. ^{13}C -NMR- data of the bisdimedone derivatives




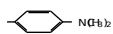
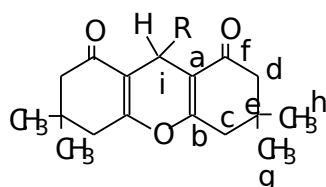
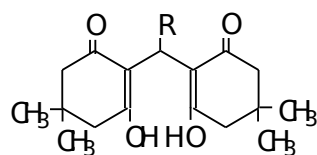
Comp.	R	chemical shift- δ -value-ppm									
		a	b	c	D	e	f	H	g	j	r
II	-CH ₃	163.7	117	51.4	41.1	30.5	197.97	32.76	30.90	32.7	21.7
X		160.00	140.19	47.76	34.10	32.82	190.98	30.98	30.78	31.18	129.45,1 28.28,12 6.94, 116.63
XIV	 -NG _h	166.00	148.8	46.3	39.8	31.7	190.00	30.95	30.70	31.2	127.40,1 26.00,11 5.5,112.4 ,28.3

Table 2.5.b. ¹³C-NMR- data of the octahydro xanthene derivatives



Comp. No.		chemical shift- δ -value-ppm									
		a	b	c	D	e	f	H	e	j	R
IX	-CHO	165.00	118.20	51.45	46.98	32.40	190.00	29.64	28.30	74.60	196.00
XI		163.56	145.70	51.24	41.16	31.78	196.37	29.23	27.28	31.37	129.41, 128.67, 127.04, 116.09
XV		162.01	148.00	50.32	40.16	31.76	195.39	29.68	29.49	30.40	132.78, 128.85, 115.54, 111.93, 111.93
XVII		164.22, 163.76	148.21, 146.46	56.82, 51.93	47.55, 43.77	32.44, 33.18	196.61, 190.61	30.79, 30.60	27.62, 25.04	30.99	137.78, 122.12, 118.79, 116.82, 115.79, 113.92

Table 2.6.a. Ultraviolet data of the bisdimeone derivatives





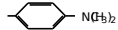


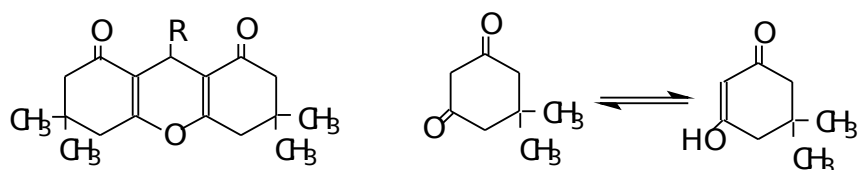
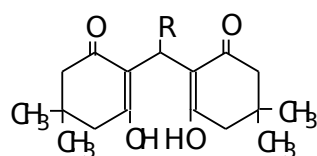
Compounds no	R	Solvent used	λ_{max} (nm)
II	-CH ₃	Acetone	328,316,300
IV	-CCl ₃	Acetone	330,309,296
VI	-H	Acetone	383,328,313,299,286
VIII	-CHO	Acetone	330,306,292
X		Acetone	328,313,299
XII		Acetone	330 ,295
XIV		Acetone	365,329,320,311,298
XVI		Acetone	365,329,311,296
XVIII		Acetone	329,314,299

Table 2.6.b. Ultraviolet data of the octahydro xanthene derivatives



Compounds no	R	Solvent used	λ_{max} (nm)
I	-	Acetone	329,318,301,287
III	-CH ₃	Acetone	365,327,316,297
V	-CCl ₃	Acetone	383,328,313,299,286
VII	-H	Acetone	330,306,292
IX	-CHO	Acetone	335,328,321,314,298
XI		Acetone	328,312,297
XIII		Acetone	329,319,298
XV		Acetone	329,310,296
XVII		Acetone	383,364,327,318,305,298
XIX		Acetone	329,313,297,286

Table 2.7.a. Thin layer chromatographic data of the bisdimeedone derivatives:





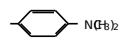


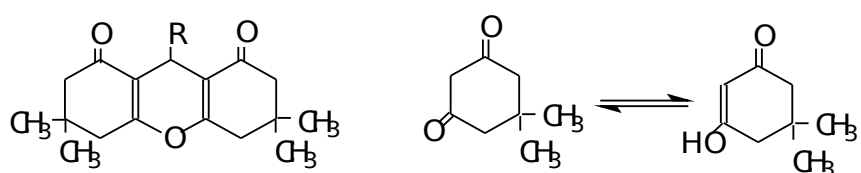
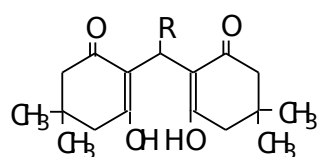
Compound No.	R	Solvent system	R _f value
II	-CH ₃	EtOAc:pet-ether (3:7)	0.30
IV	-CCl ₃	EtOAc:pet-ether (3:7)	0.83
VI	-H	EtOAc:pet-ether (1:1)	0.42
VIII	-CHO	EtOAc:pet-ether (1:1)	0.90
X		EtOAc:pet-ether (1:9)	0.83
XII		EtOAc:pet-ether (1:1)	0.53
XIV		EtOAc:pet-ether (1:1)	0.87
XVI		EtOAc:pet-ether (3:7)	0.94
XVIII		EtOAc:pet-ether (3:7)	0.63

Table 2.7.b. Thin layer chromatographic data of the octahydro xanthene derivatives:



Compound No.	R	Solvent system	R _f value
I		EtOAc:pet-ether (3:7) EtOAc:pet.ether (1:1)	0.12 0.24
III	-CH ₃	EtOAc:pet-ether (3:7)	0.40
V	-CCl ₃	EtOAc:pet-ether (3:7)	0.83
VII	-H	EtOAc:pet-ether (1:1)	0.42
IX	-CHO	EtOAc:pet-ether (1:1)	0.80
XI		EtOAc:pet-ether (1:9)	0.60
XIII		EtOAc:pet-ether (1:1)	0.63
XV		EtOAc:pet-ether (1:1)	0.56
XVII		EtOAc:pet-ether (1:7)	0.26
XIX		EtOAc:pet-ether (1:7)	0.50

Table 2.8 a. Melting points of hydrazones and oximes bis dimedone derivatives in °C.





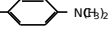


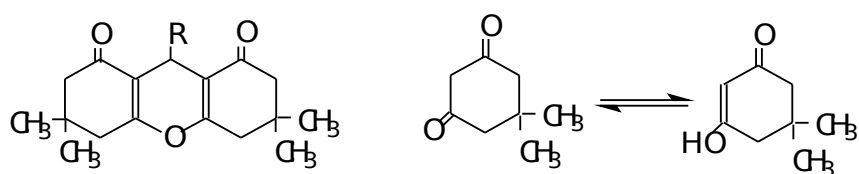
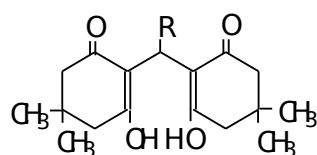
Compound No	R	Hydrazones	Oximes
II	CH ₃	130	70
IV	CCl ₃	84	36
VI	H	260	180
VIII	-CHO	174	52
X		238	188
XII		160	130
XIV		196	120
XVI		260	80
XVIII		70	280

Table 2.8.b. Melting points of hydrozones and oximes xanthene derivatives in °C



Compound No	R	Hydrozones	Oximes
I	-	-	-
III	CH ₃	174	110
V	CCL ₃	84	36
VII	-H	260	180
IX	-CHO	120	60
XI		250	140
XIII		116	210
XV		230	162
XVII		274	110
XIX		116	280

Table 2.9.a. Sodium hydroxide and ferric chloride tests of the bisdimedone derivatives





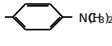


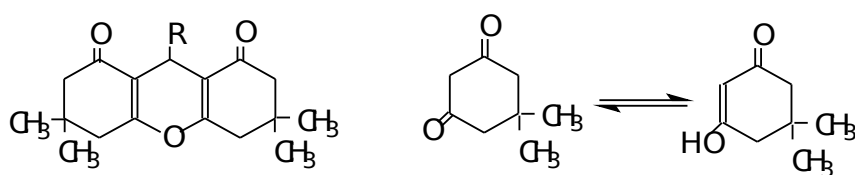
Comp. No.	R	FeCl	NaOH
II	CH ₃	+	+
IV	CCl ₃	+	+
VI	H	+	+
VIII	-CHO	+	+
X		+	+
XII		+	+
XIV		+	+
XVI		+	+
XVII		+	+

Table 2.9.b. Sodium hydroxide and ferric chloride tests of the octahydro xanthene derivatives





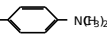


Comp. No.	R	FeCl ₃	NaOH
III	CH ₃	-	-
V	CCl ₃	-	-
VII	H	+	+
IX	-CHO	-	-
XI		-	-
XIII		+	+
XV		-	-
XVII		+	+
XIX		-	-

Table 2.10. Antibacterial activity of the prepared compounds
mean inhibition zone diameter (mm)

Compound No.	<i>S. aureus</i>	<i>E. coli</i>	<i>P. aeruginosa</i>
I	10	16	12
II	10	18	12
III	11	20	10
IV	11	14	14
V	13	31	12
VI	12	16	13
VII	12	16	13
VIII	10	12	10
IX	14	10	14
X	10	20	12
XI	10	14	10
XII	11	10	11
XIII	11	14	11
XIV	13	18	12
XV	11	18	12
XVI	12	16	12
XVII	10	14	10
XVIII	11	12	10
XIX	12	16	13

Solvent: polyethylene glycol concentration 5mg/ml.

Table 2.11. Antifungal activity of the prepared compounds

Compound No.	Mean inhibition zone diameter (mm) <i>C. albicans</i>
I	12
II	14
III	12
IV	20
V	-
VI	13
VII	13
VIII	19
IX	16
X	31
XI	32
XII	14
XIII	13
XIV	14
XV	13
XVI	16
XVII	17