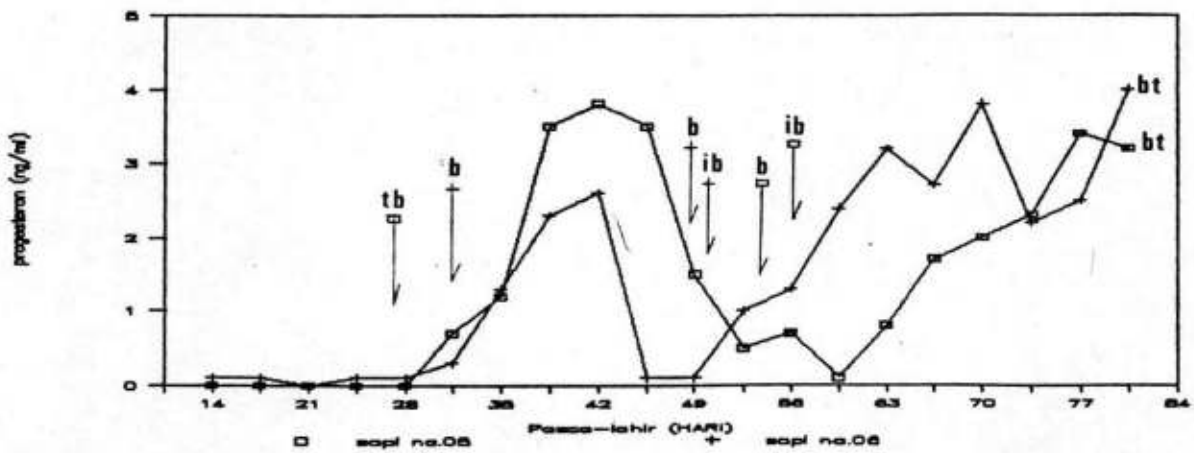
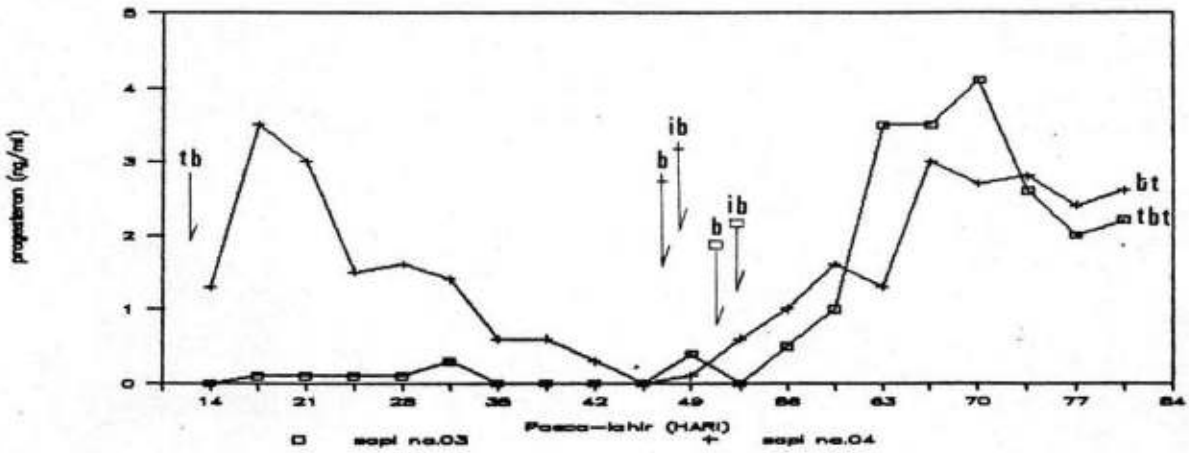
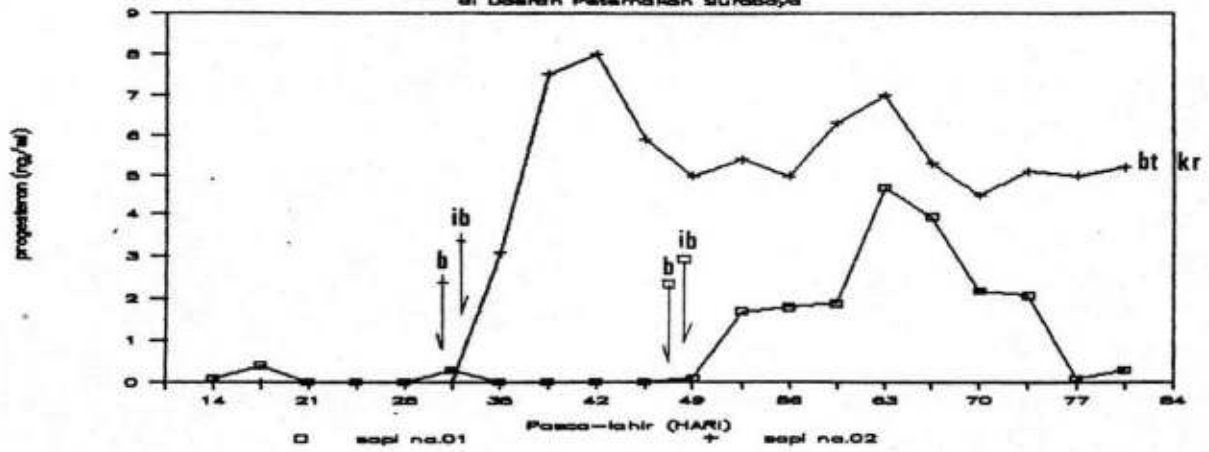
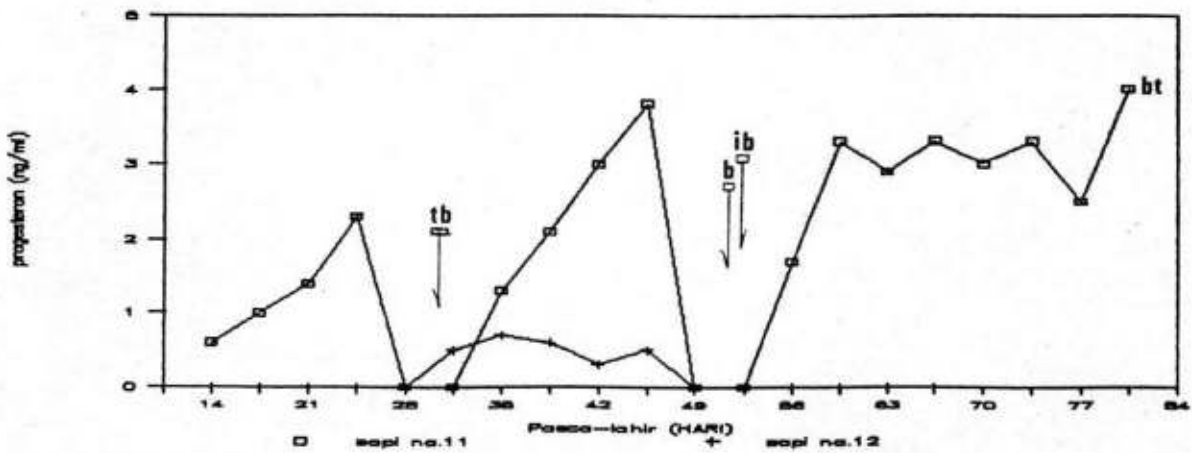
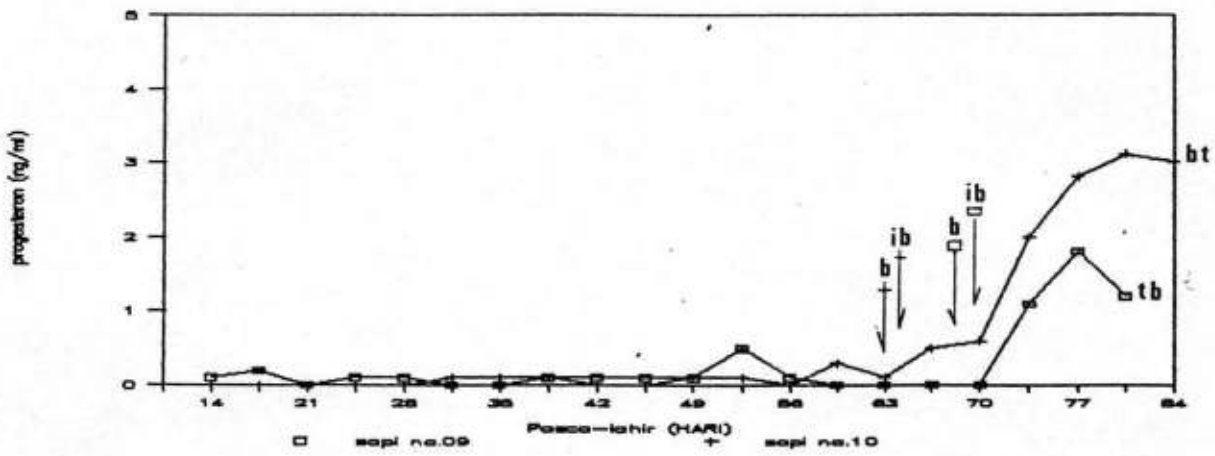
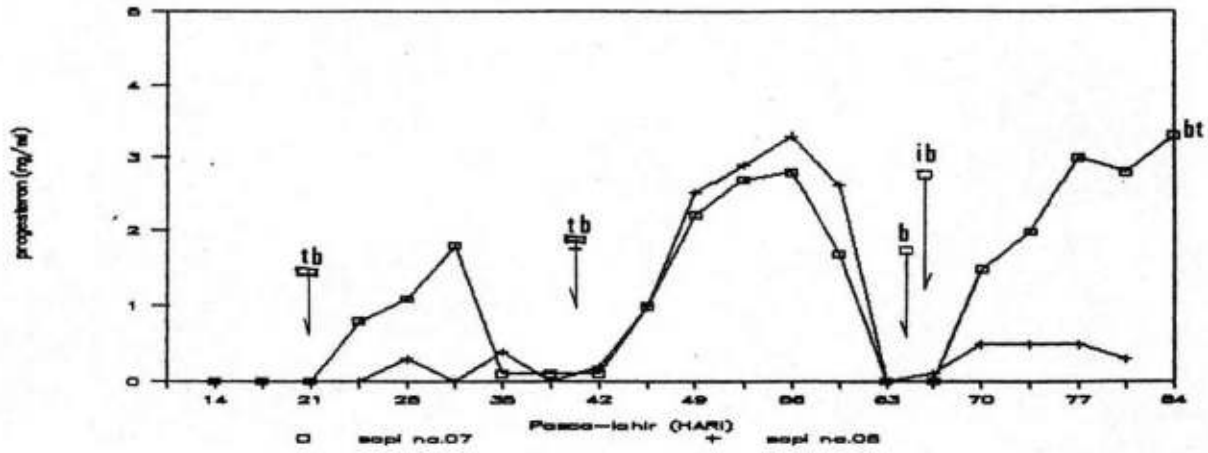
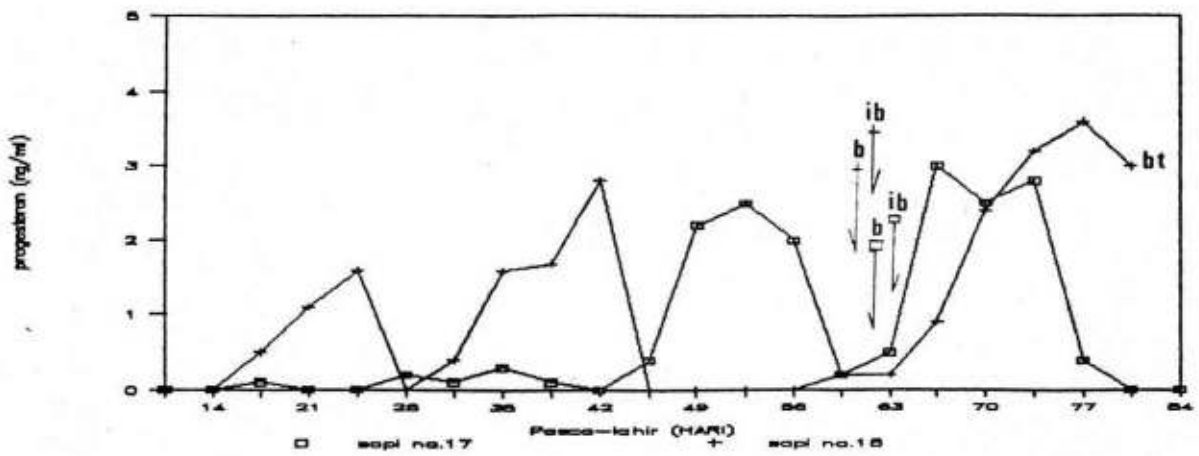
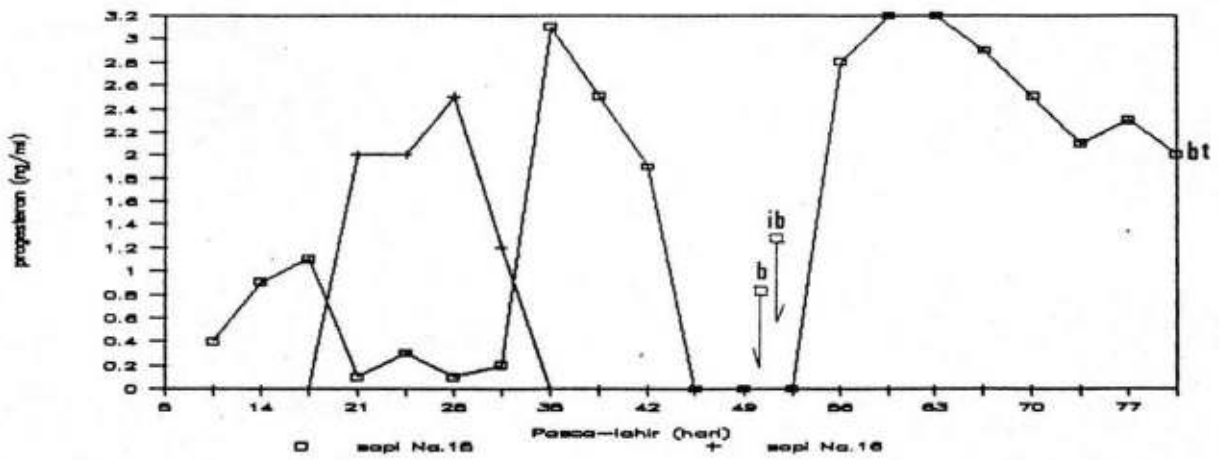
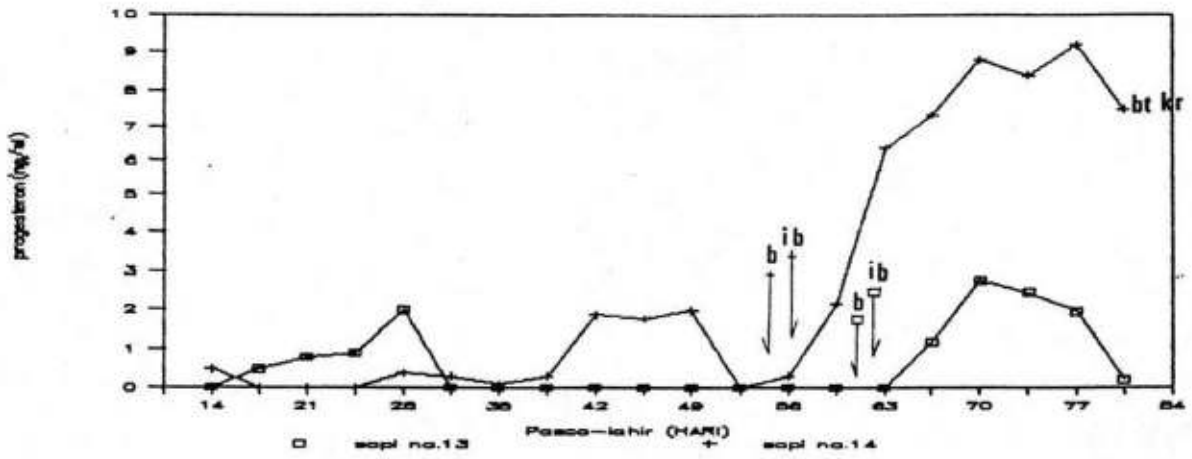
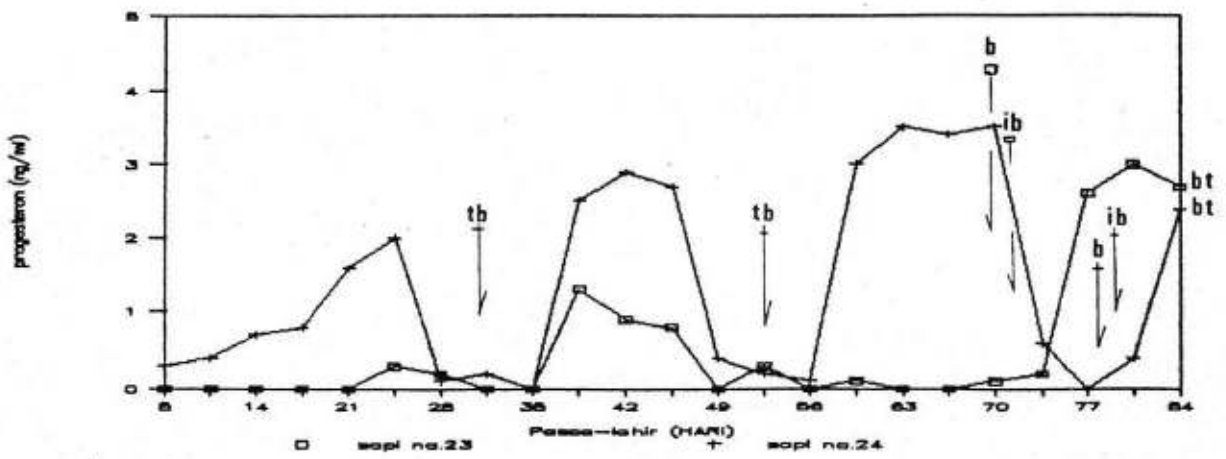
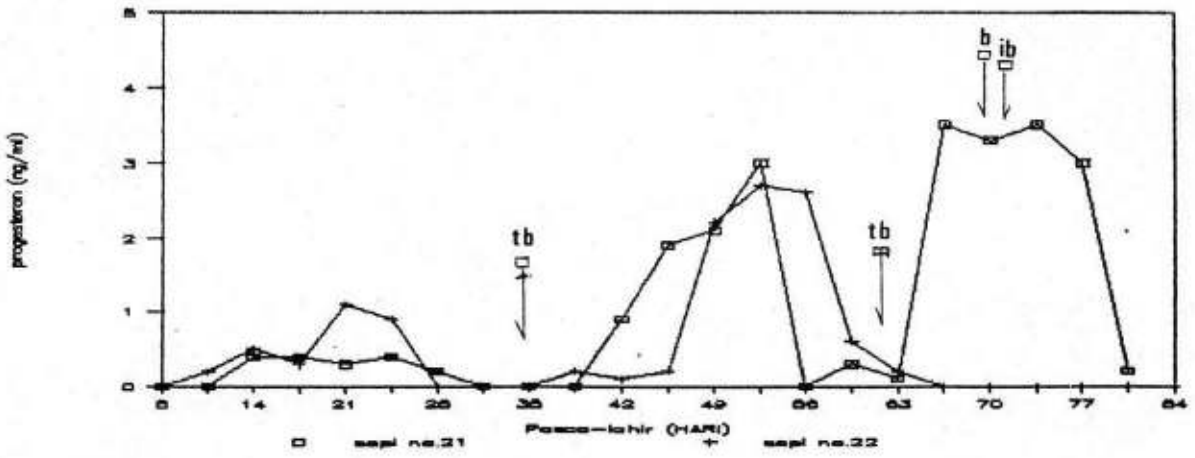
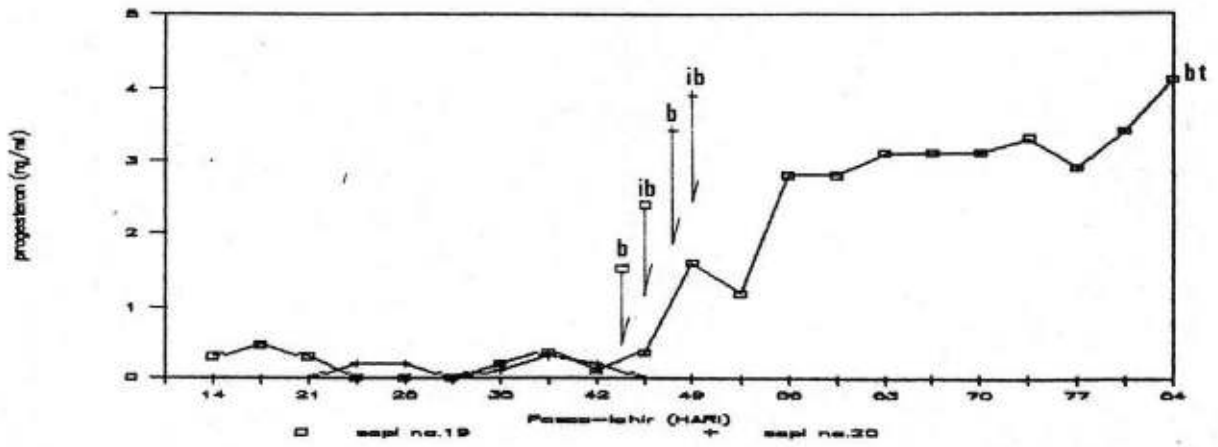


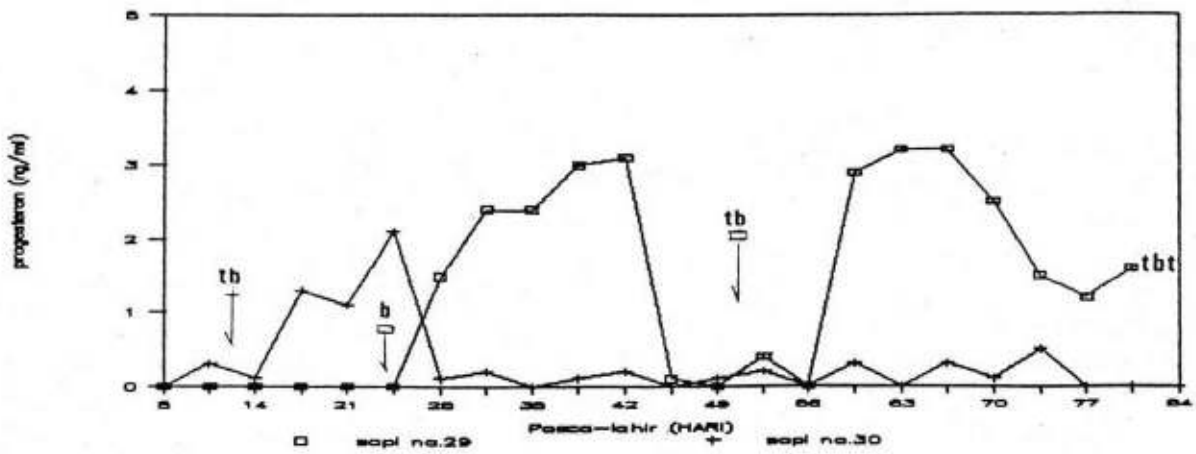
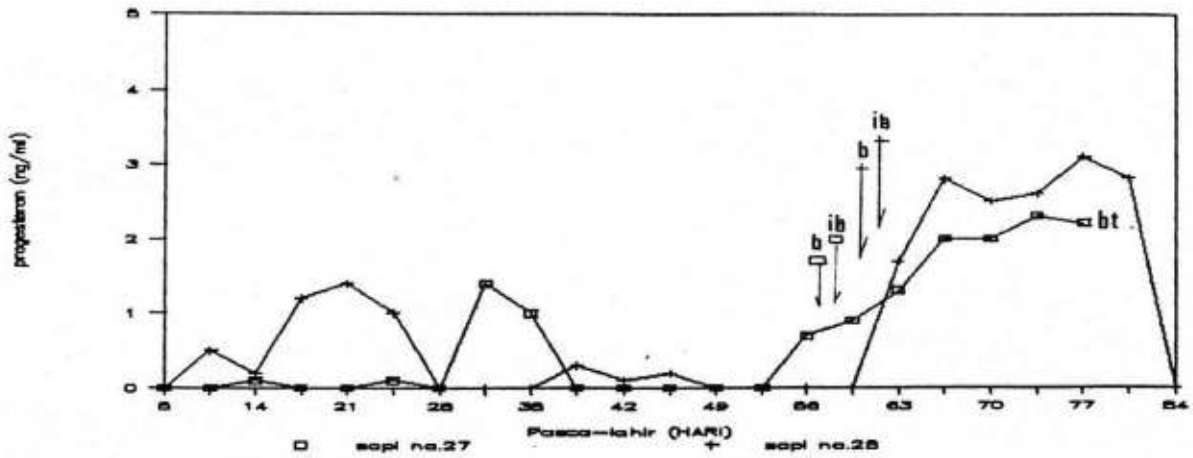
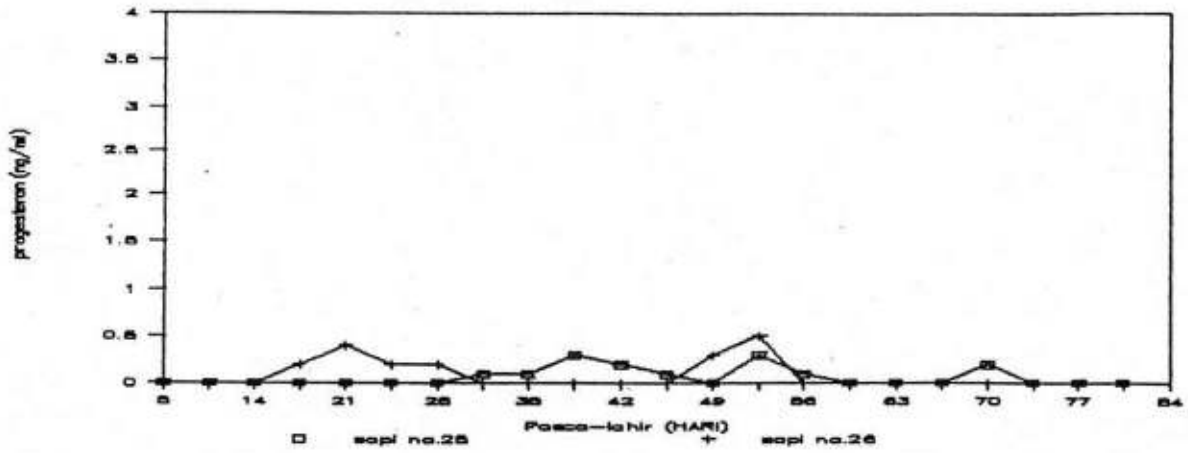
Gambar 18. Profil Progesteron Sapi Sapi  
di Daerah Peternakan Surabaya



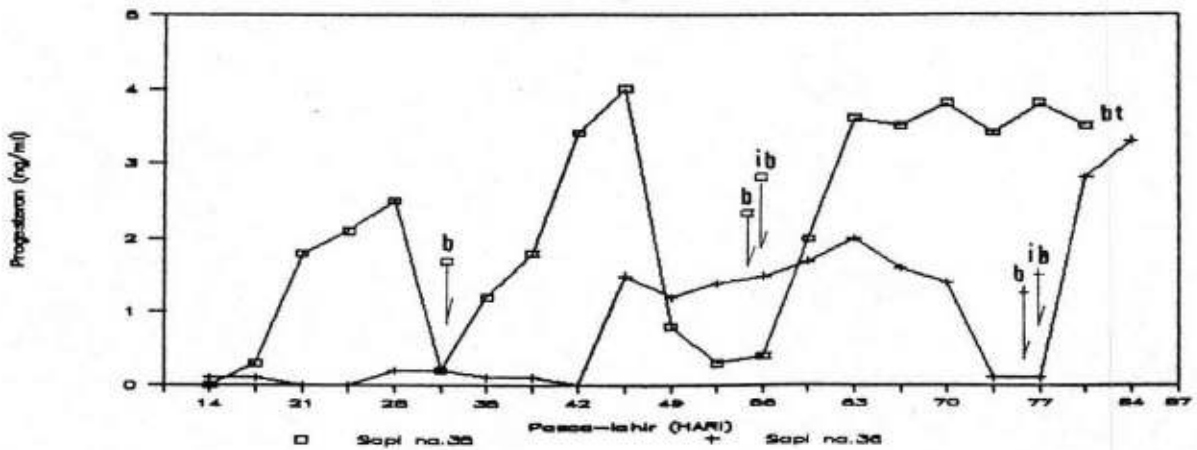
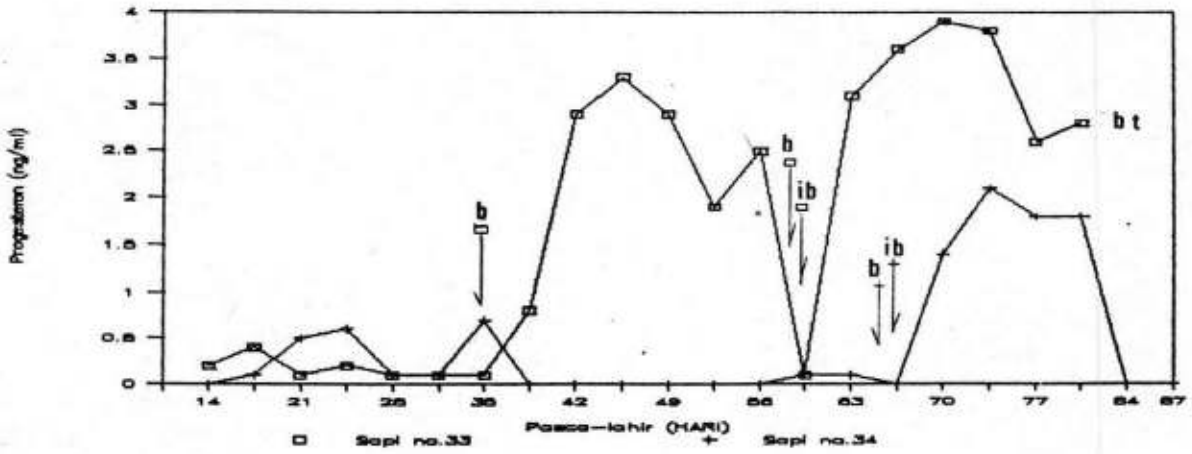
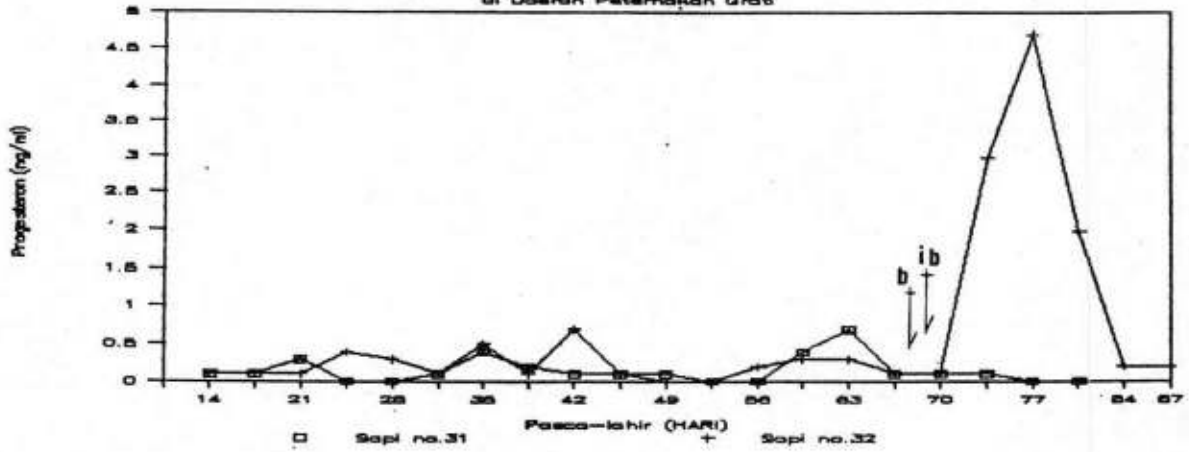


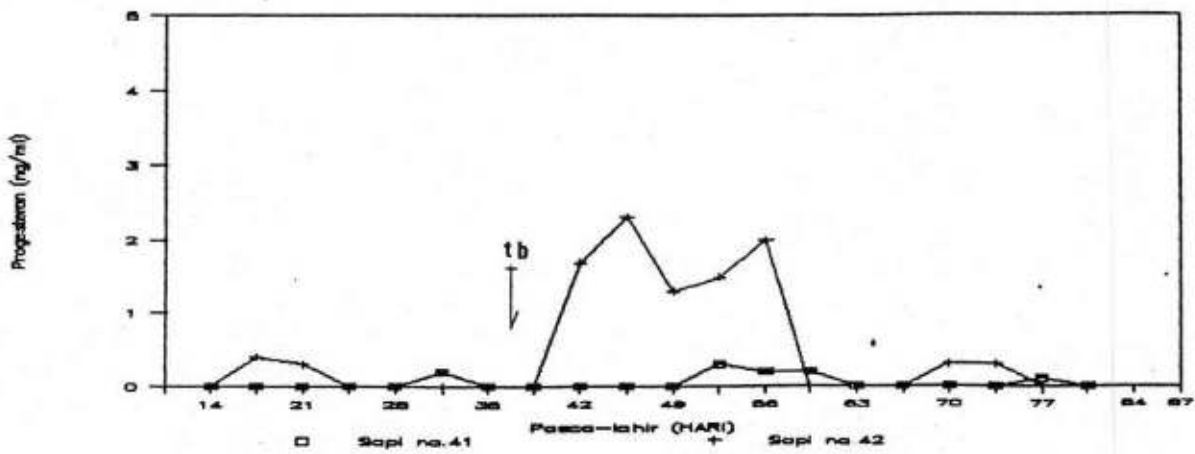
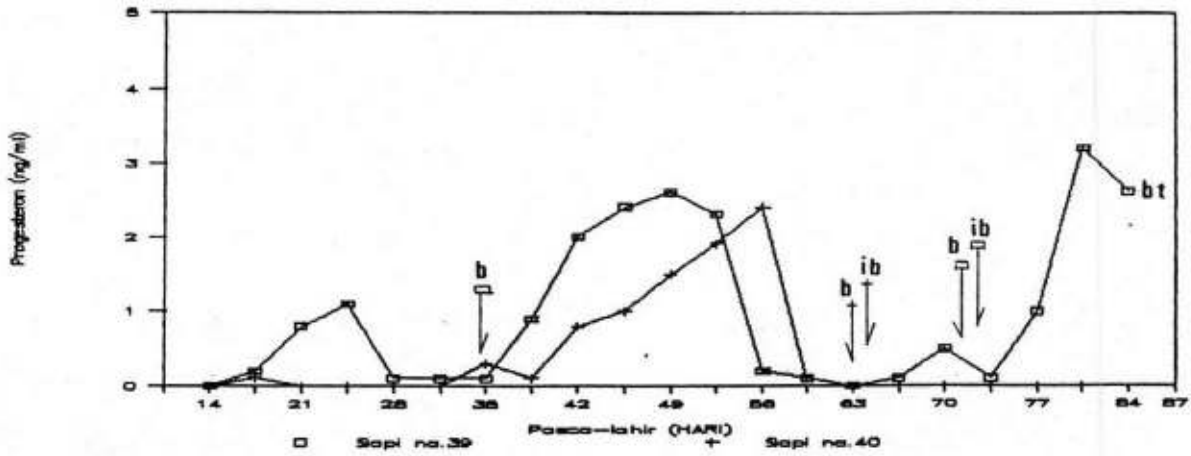
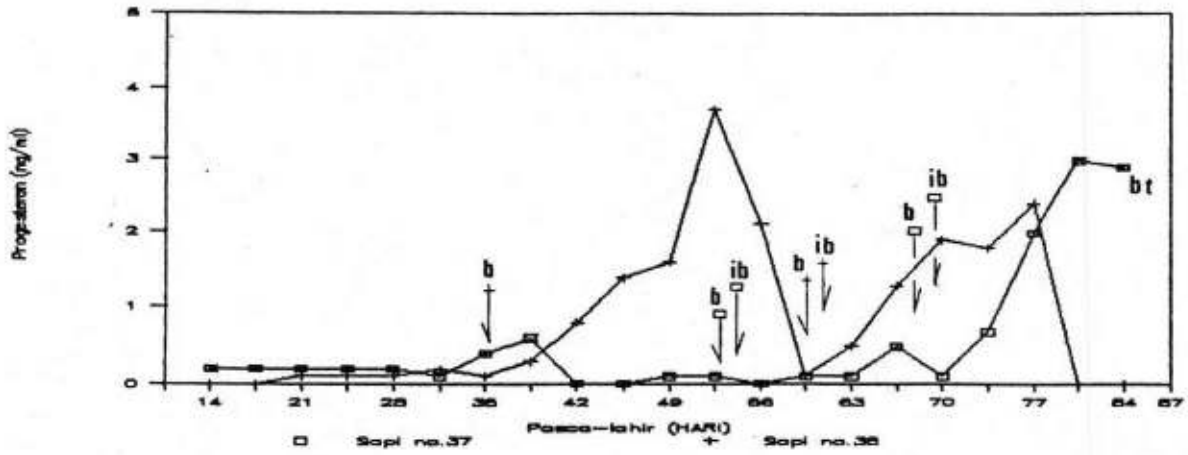


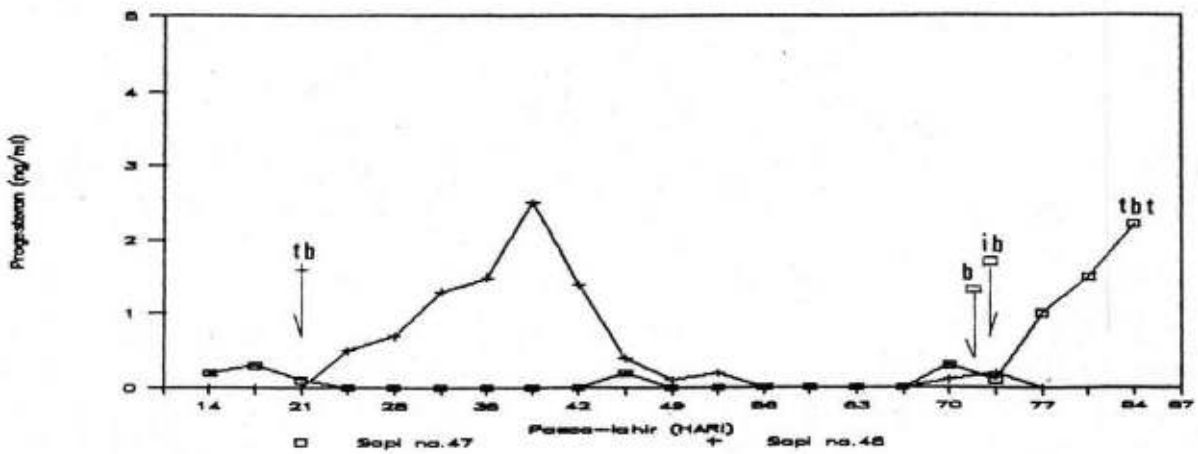
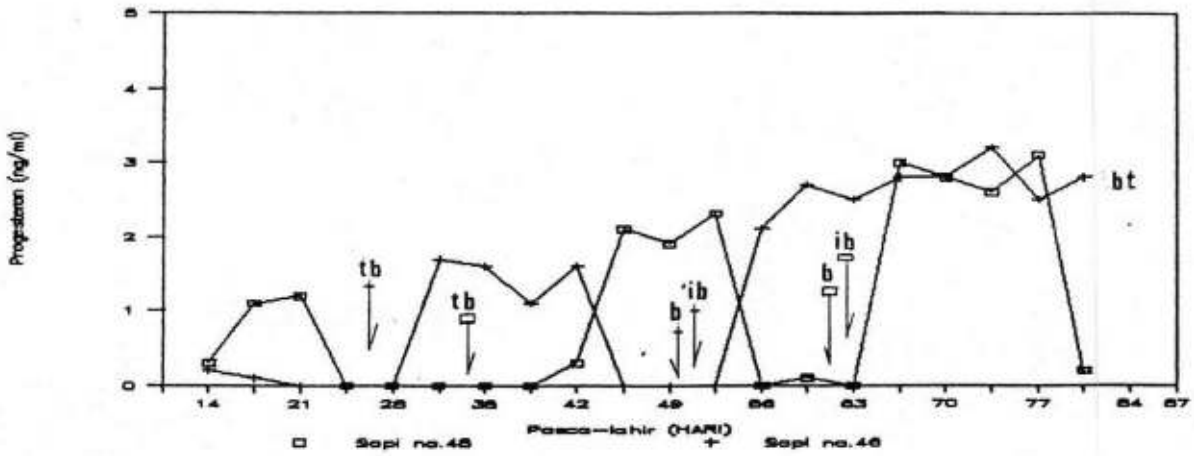
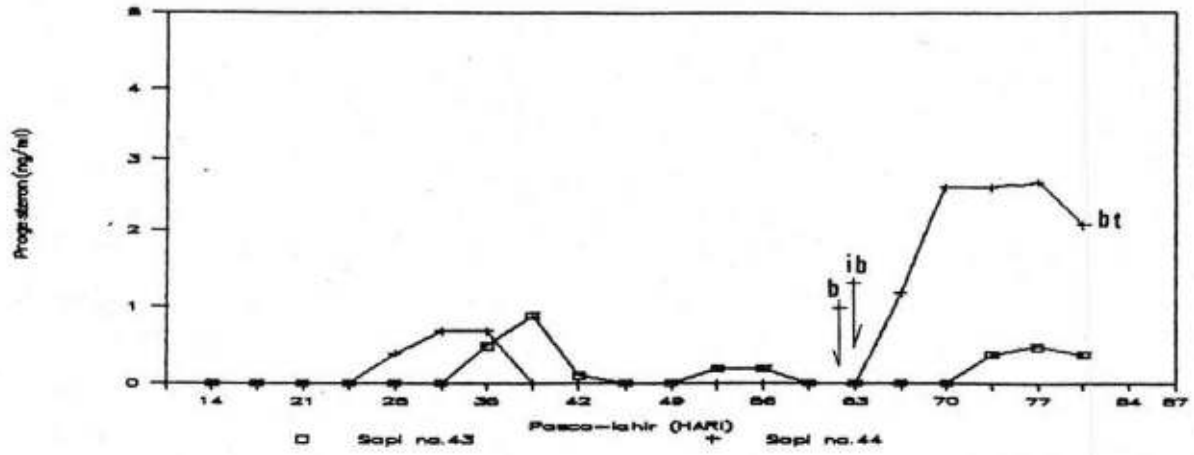




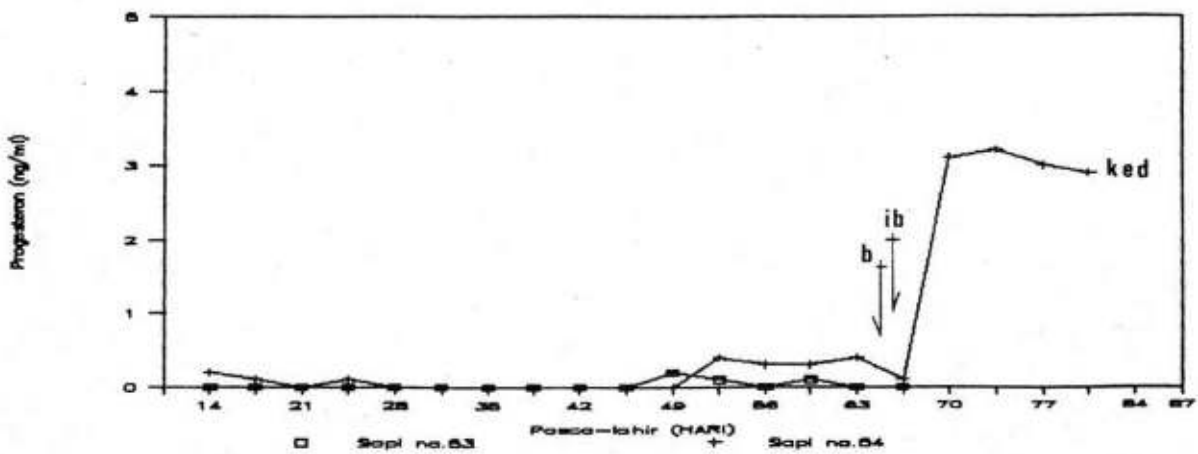
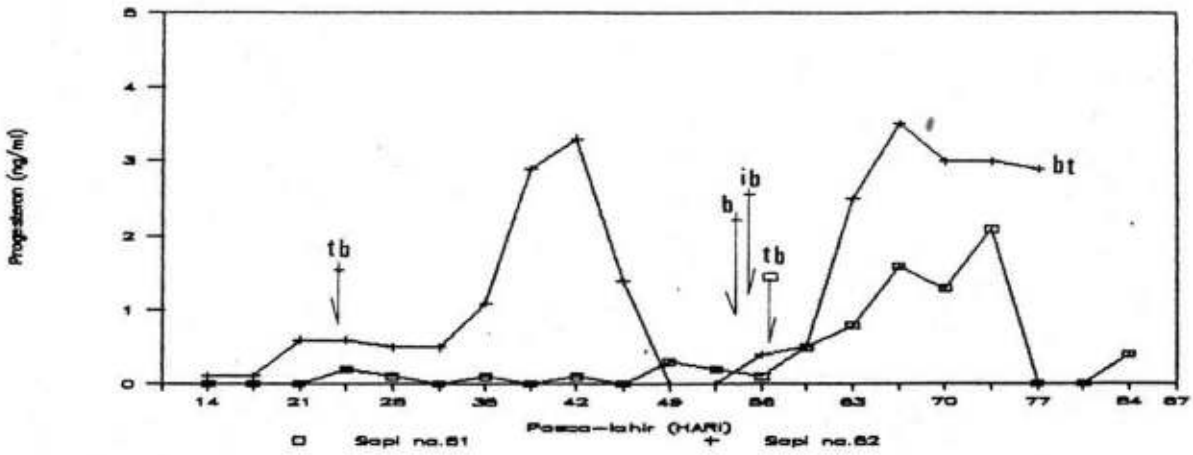
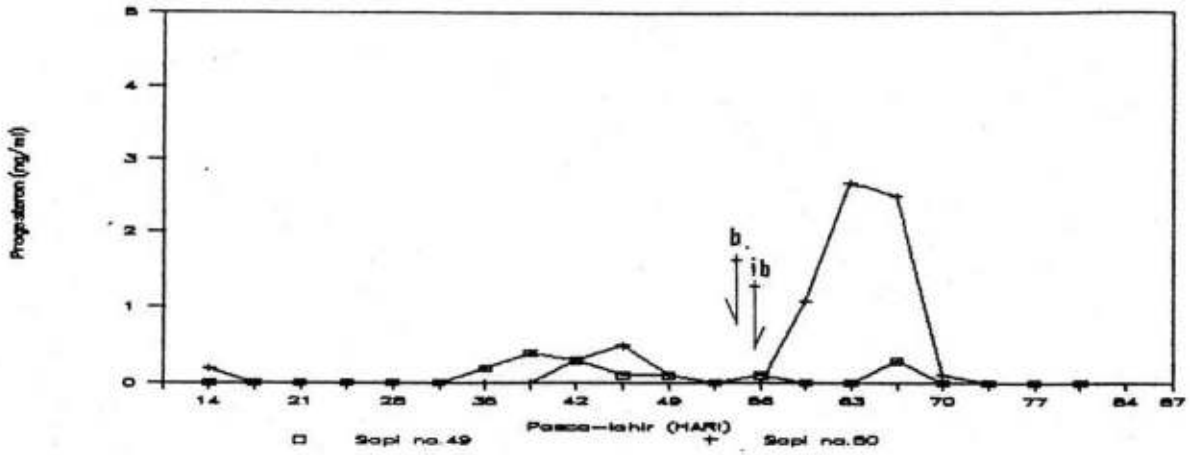
Gambar 19. Profil Progesteron Sapi Sapi  
di Daerah Paternakan Groti

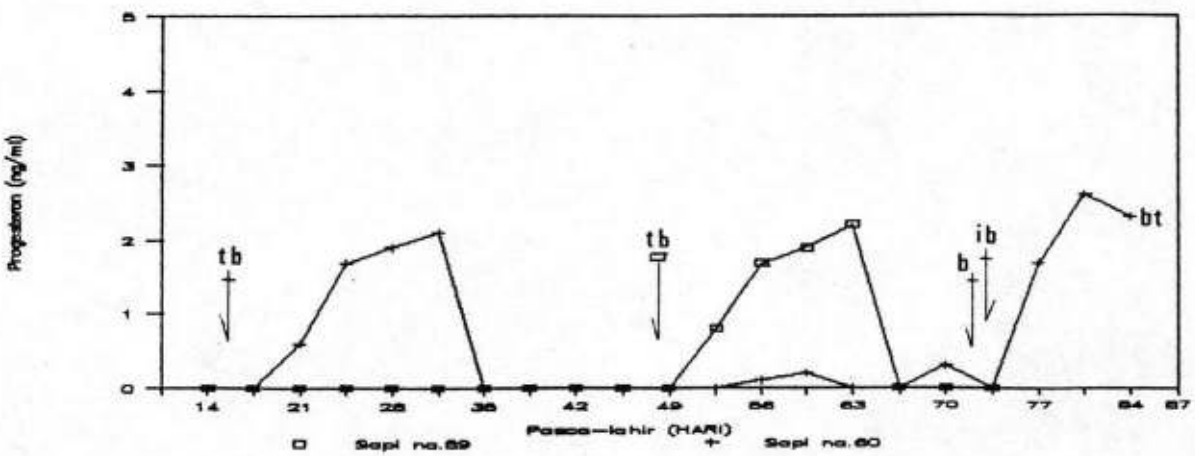
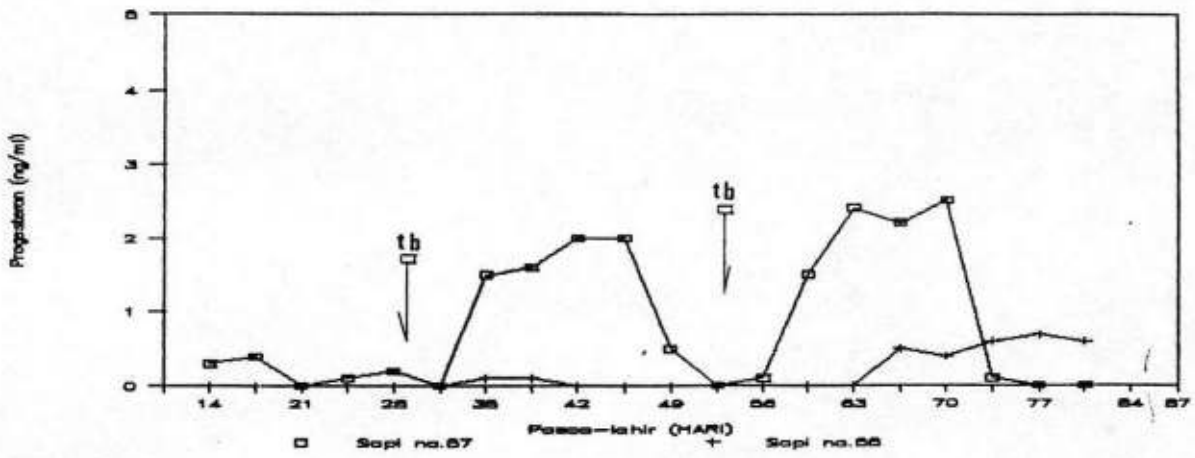
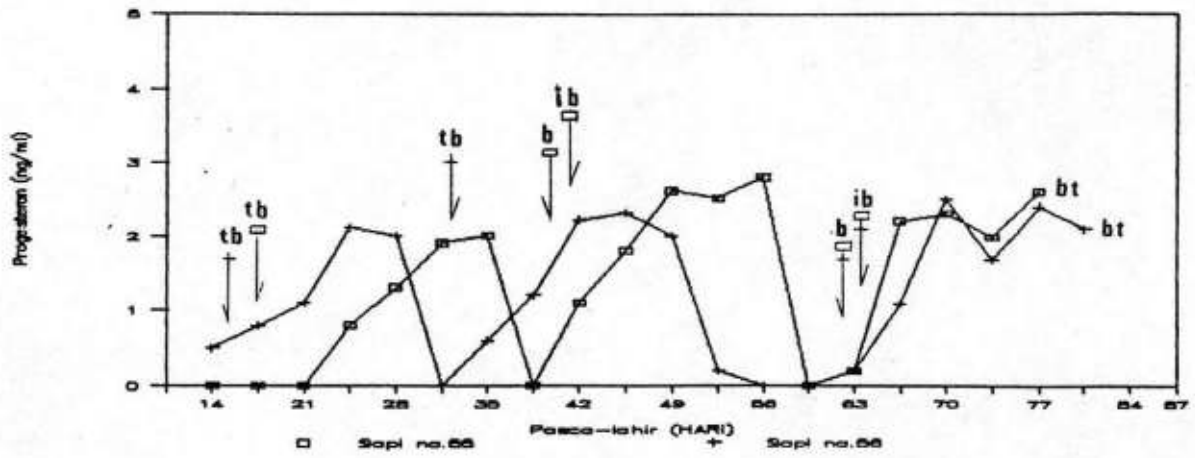




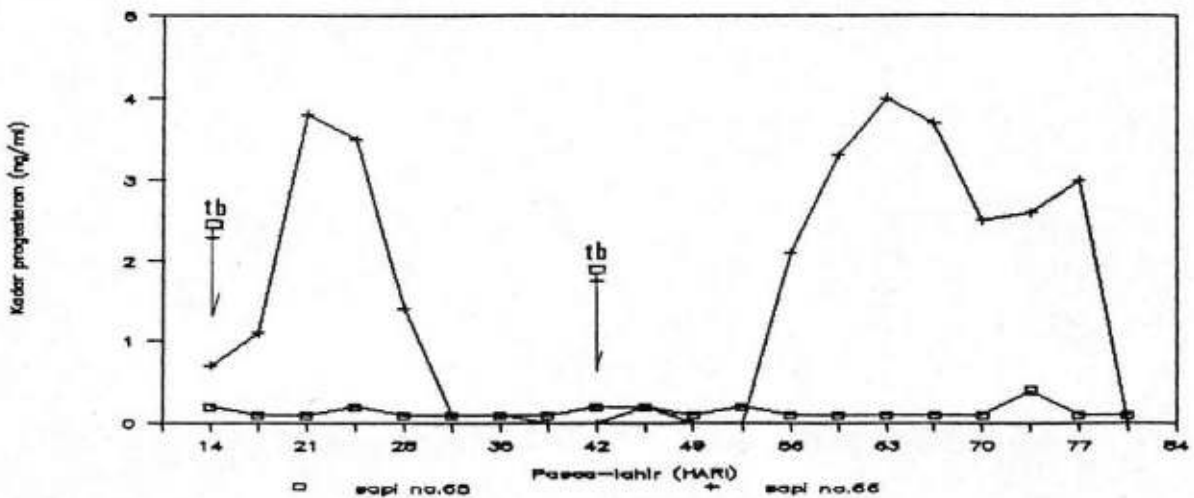
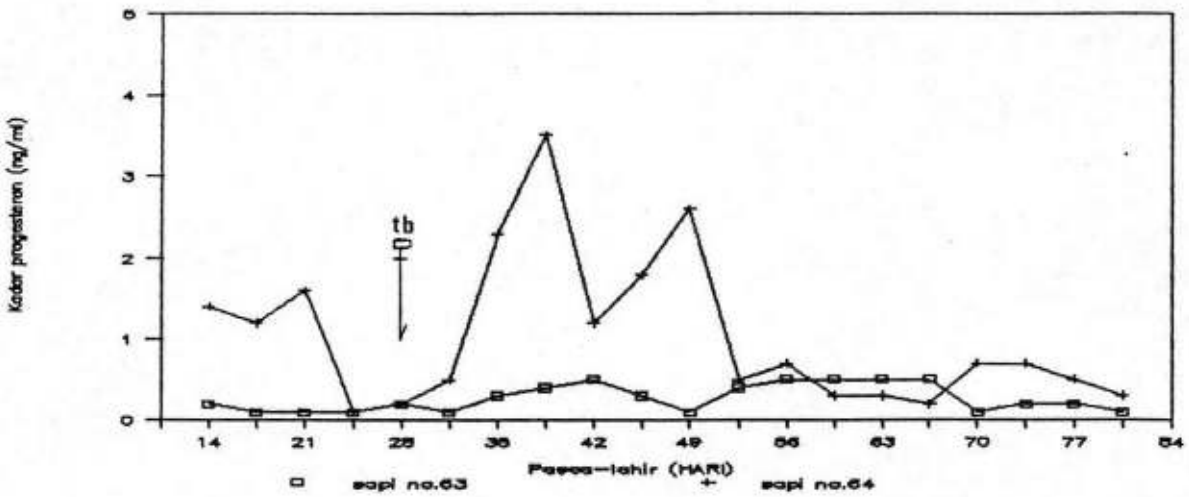
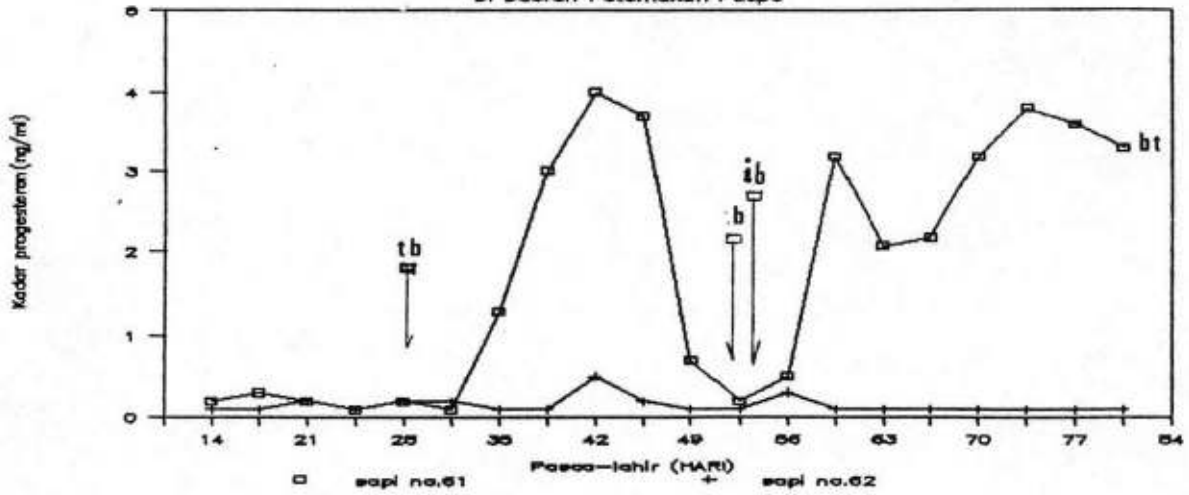


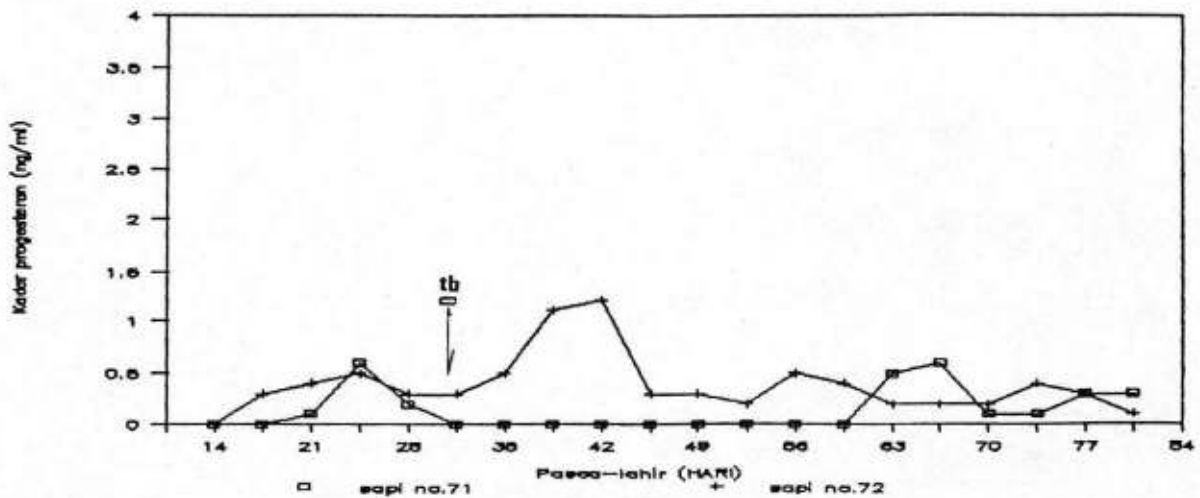
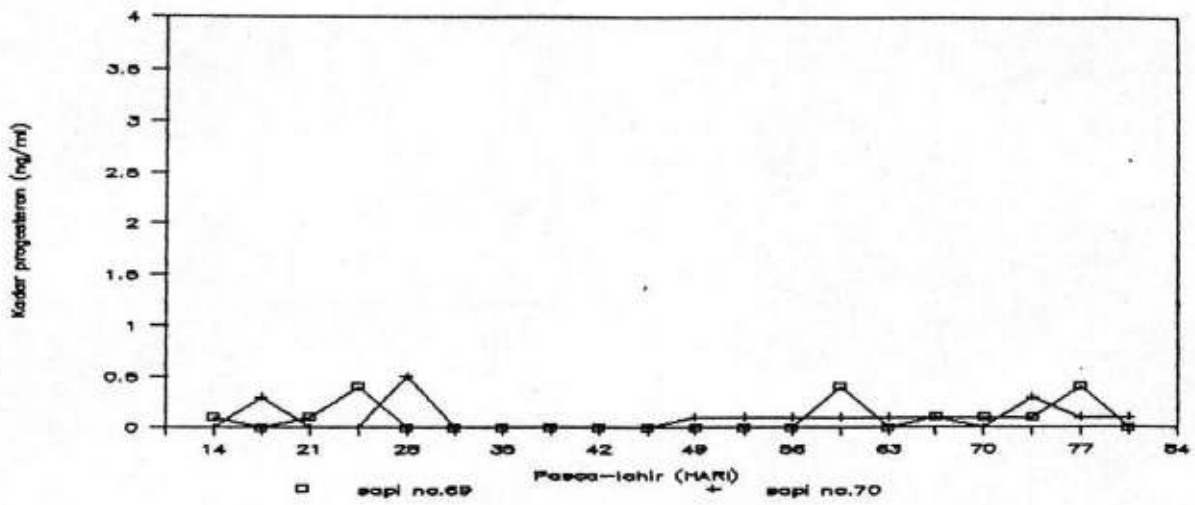
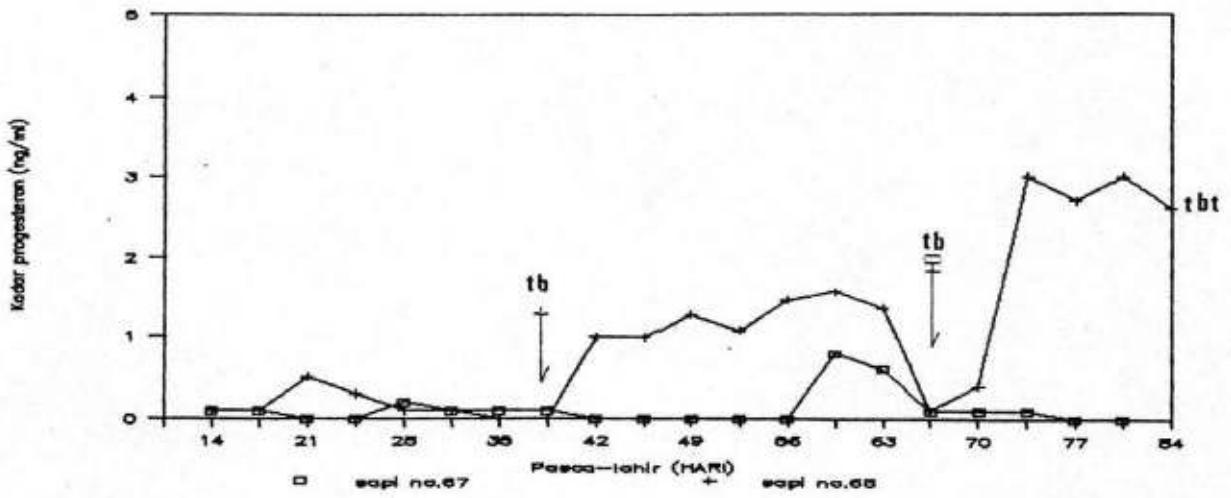


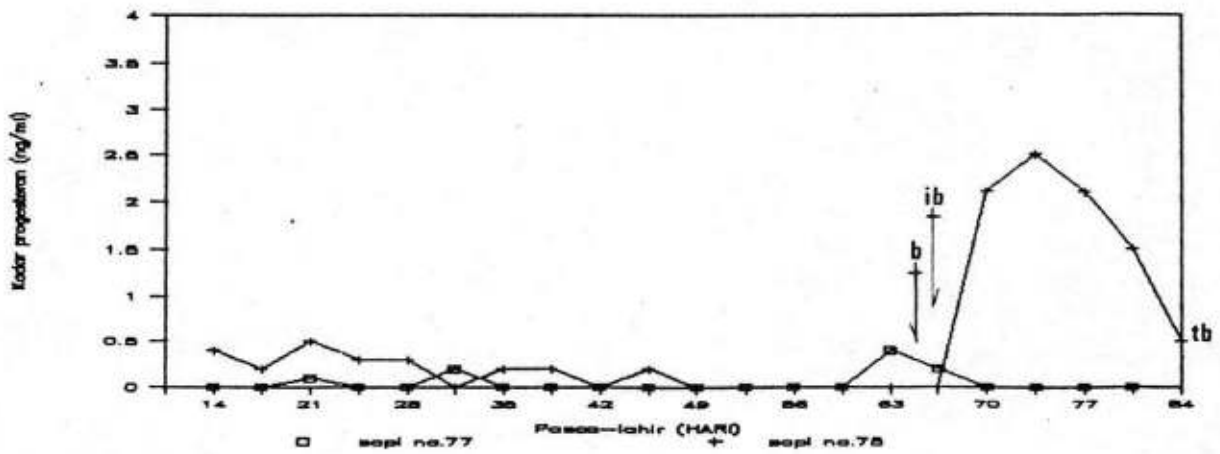
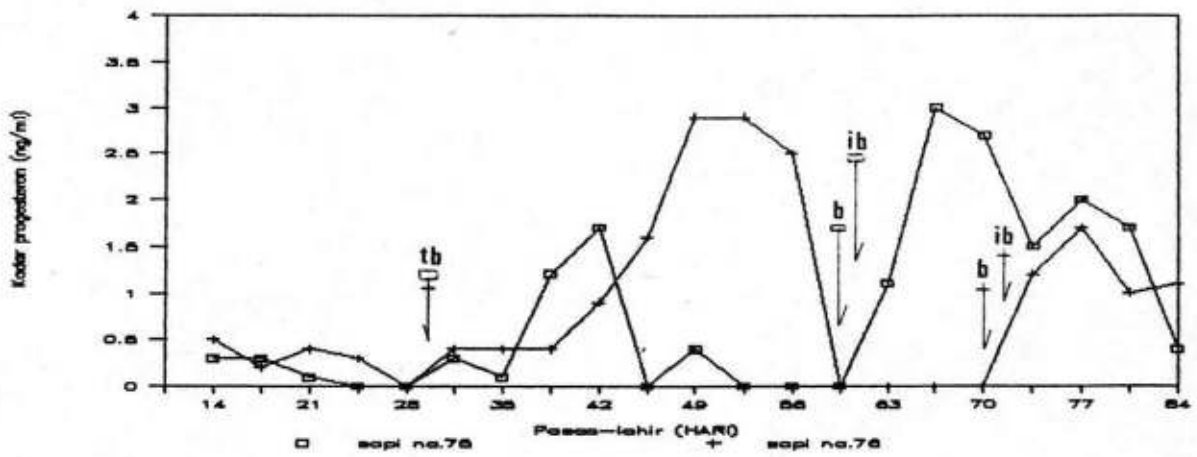
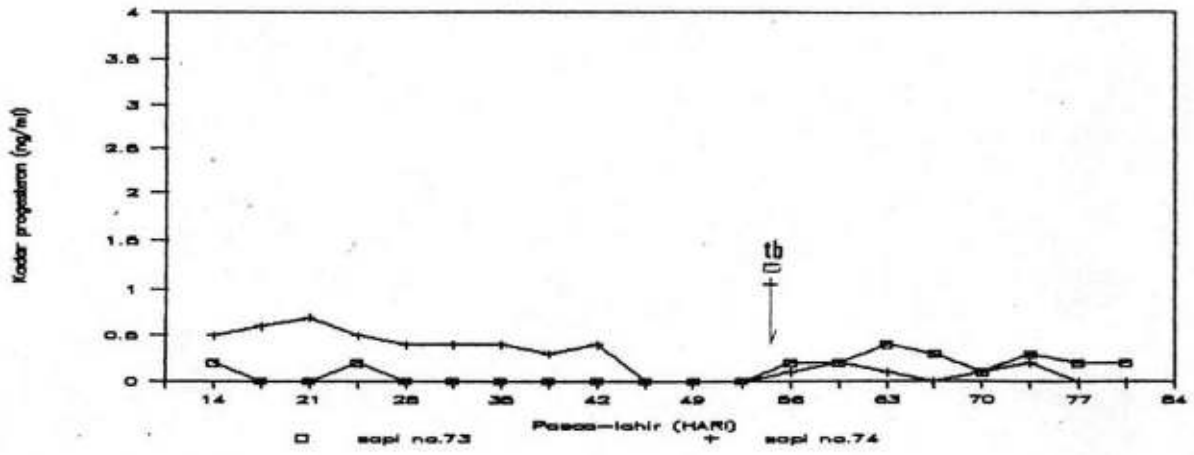


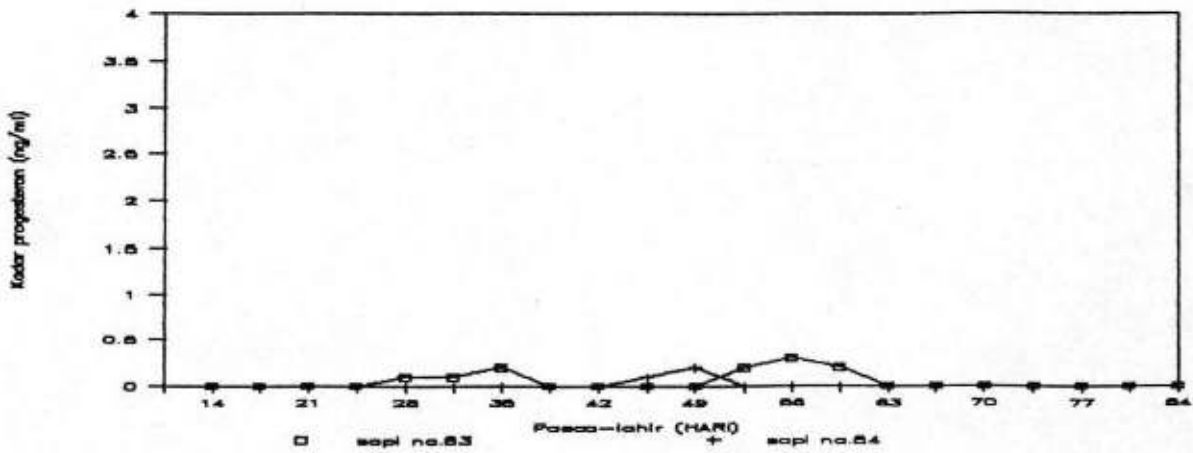
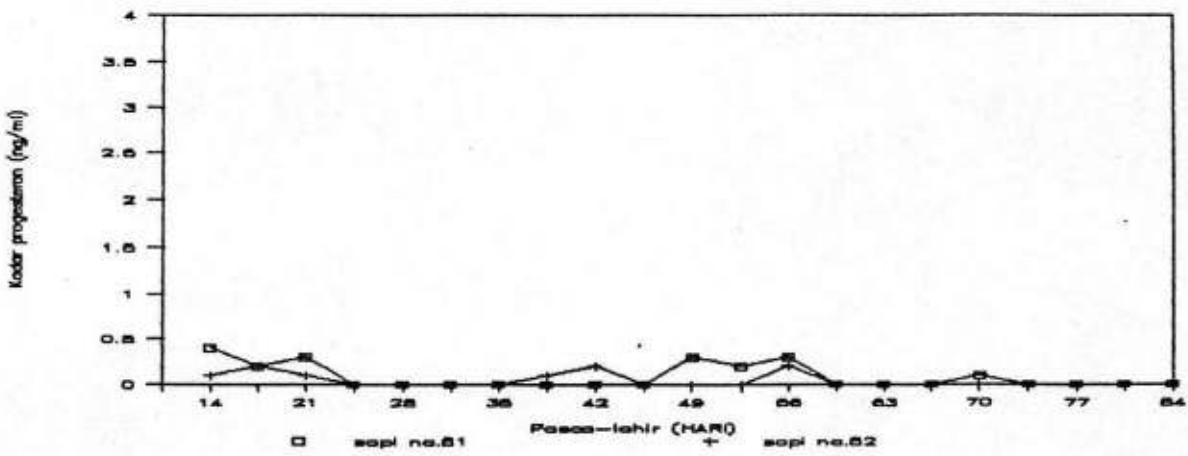
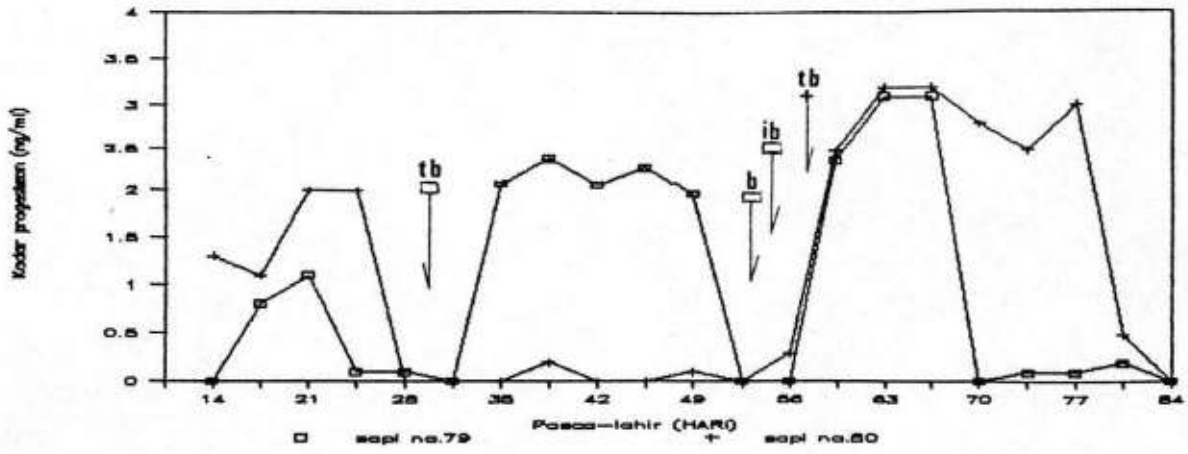


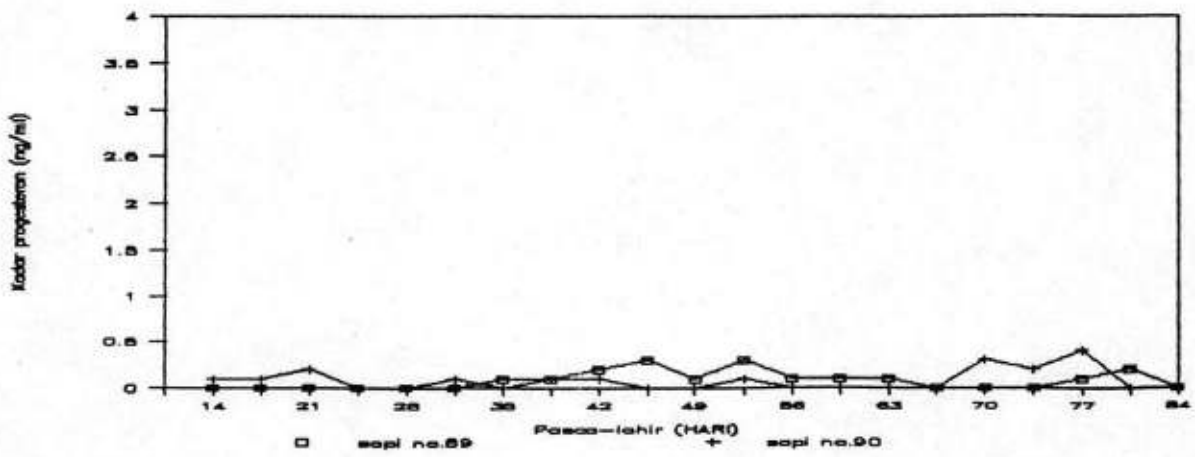
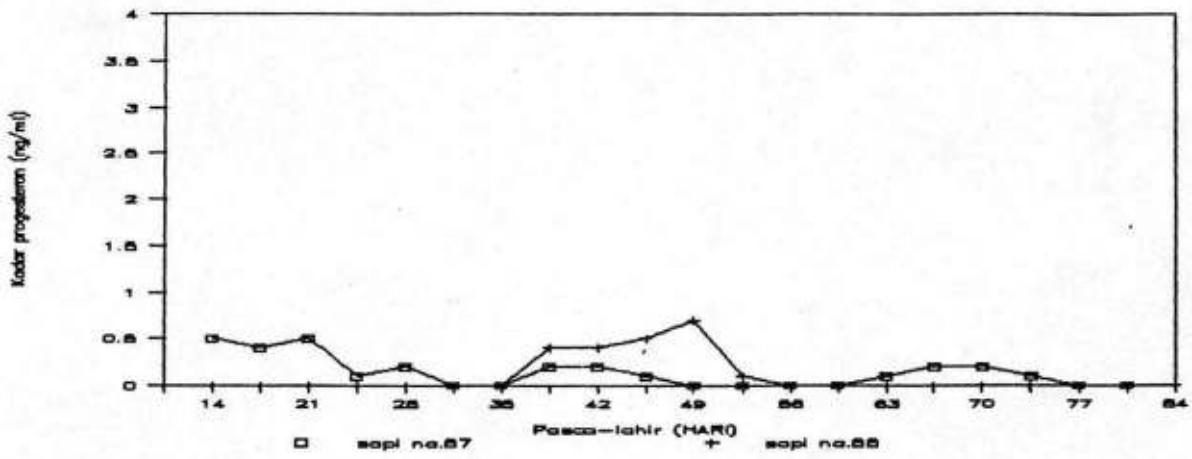
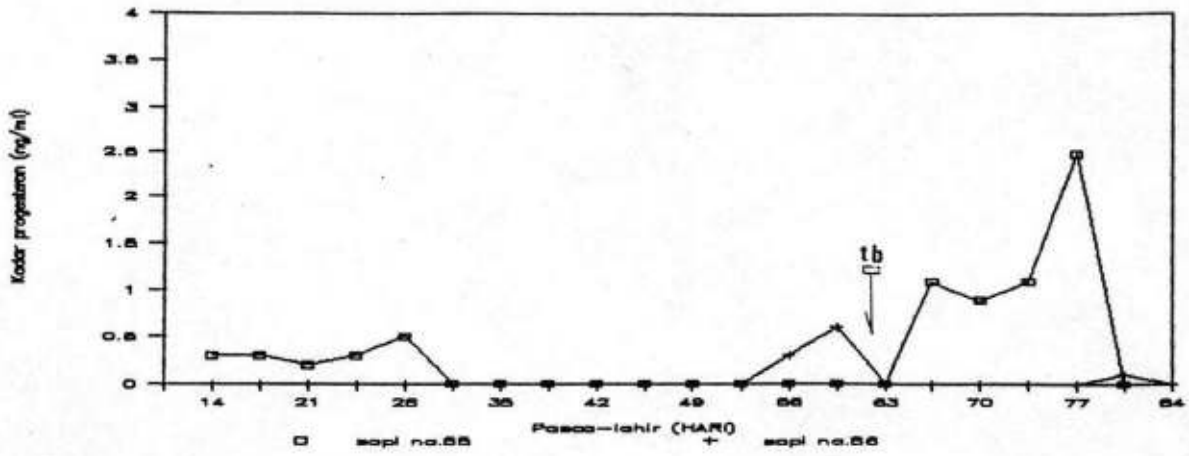
Gambar 20 Profil Progesteron Sapi Sapi  
Di Daerah Peternakan Puspa



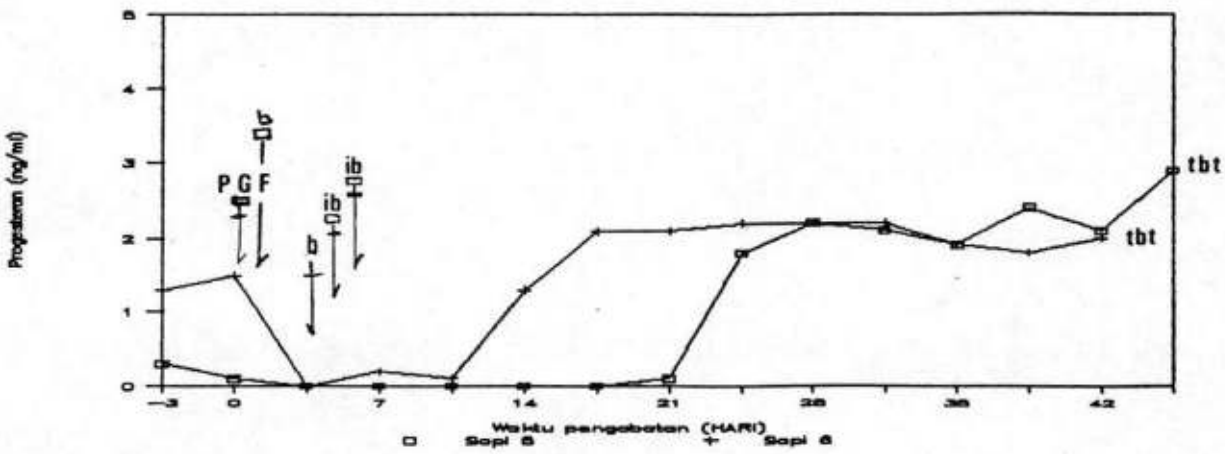
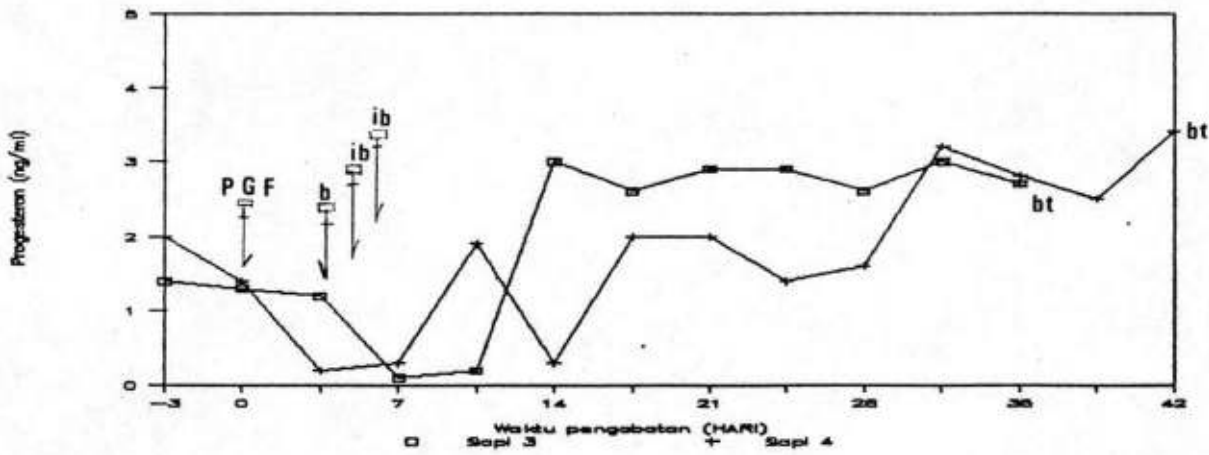
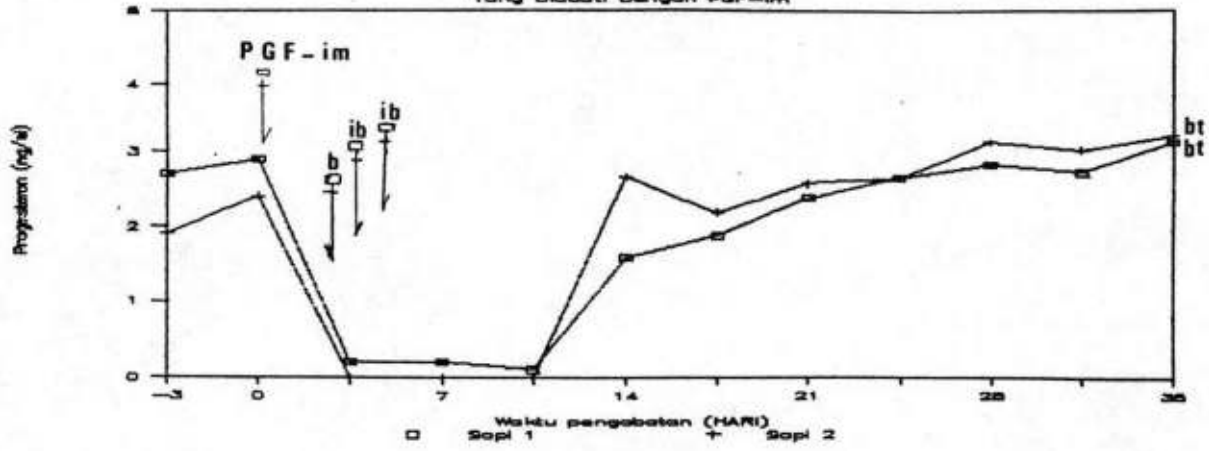




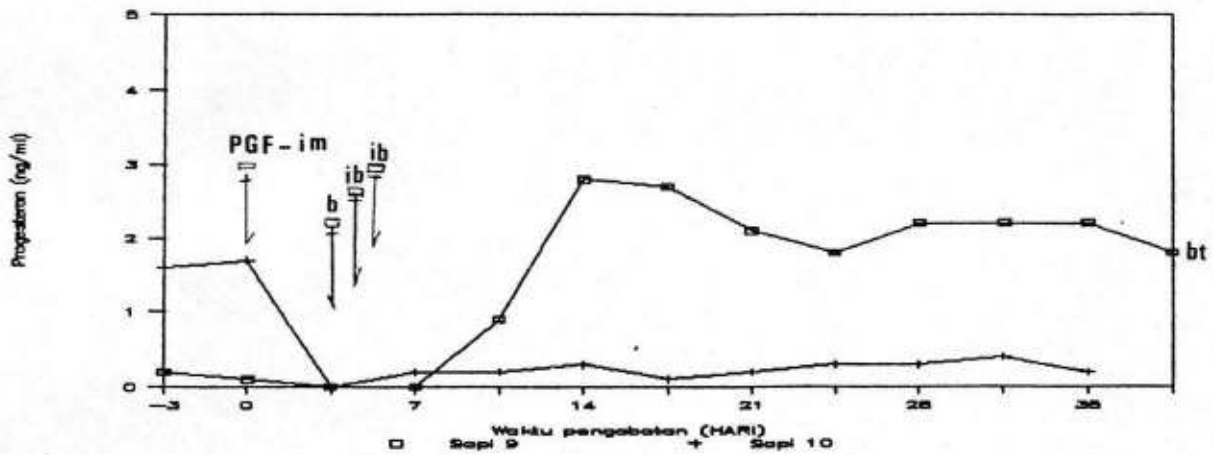
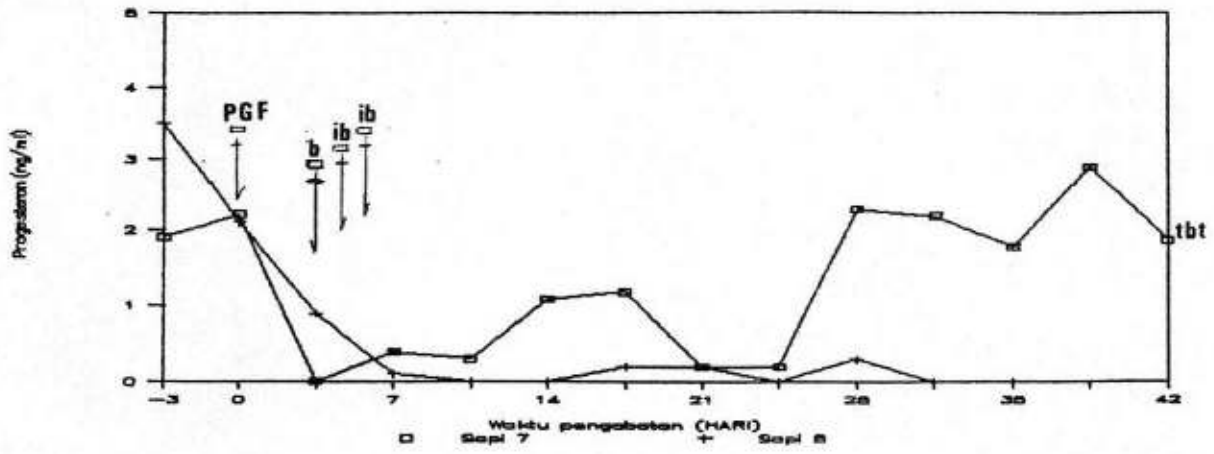




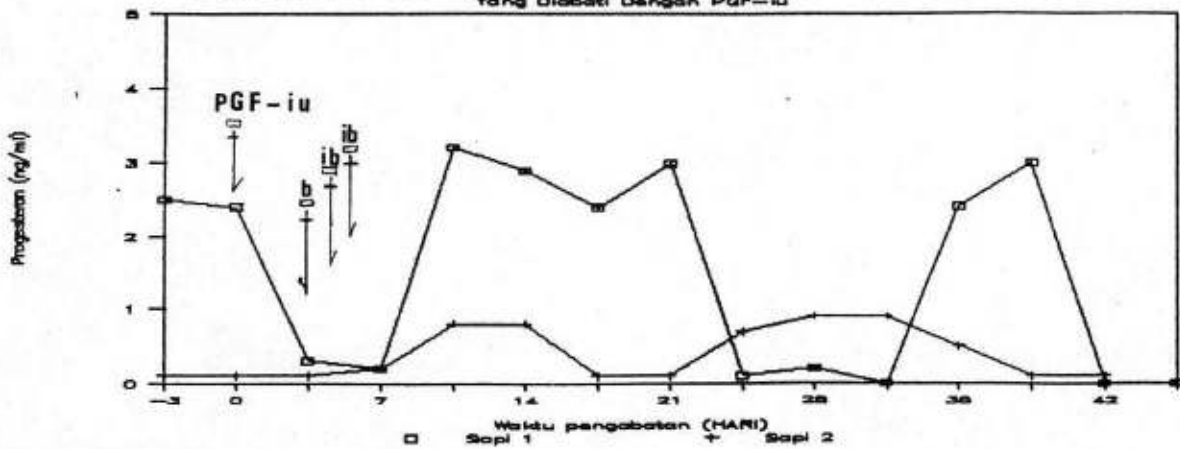
Gambar 21. Profil Progesteron Pada Sapi Yang Diobati Dengan PGF-im

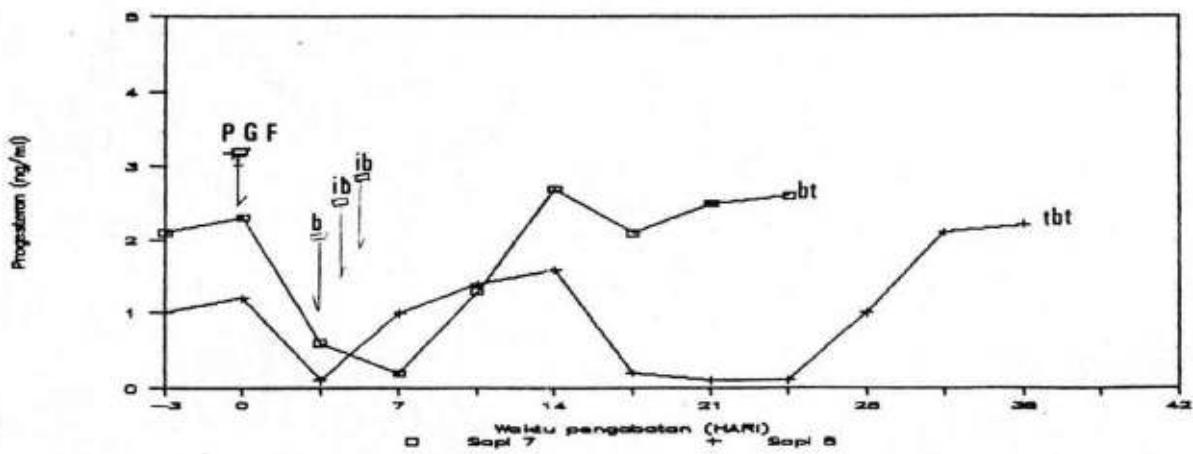
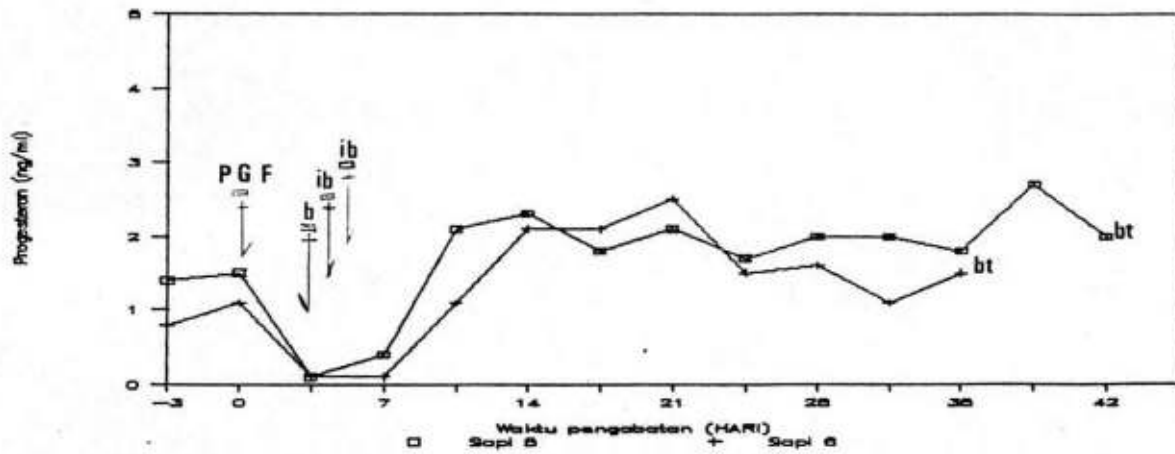
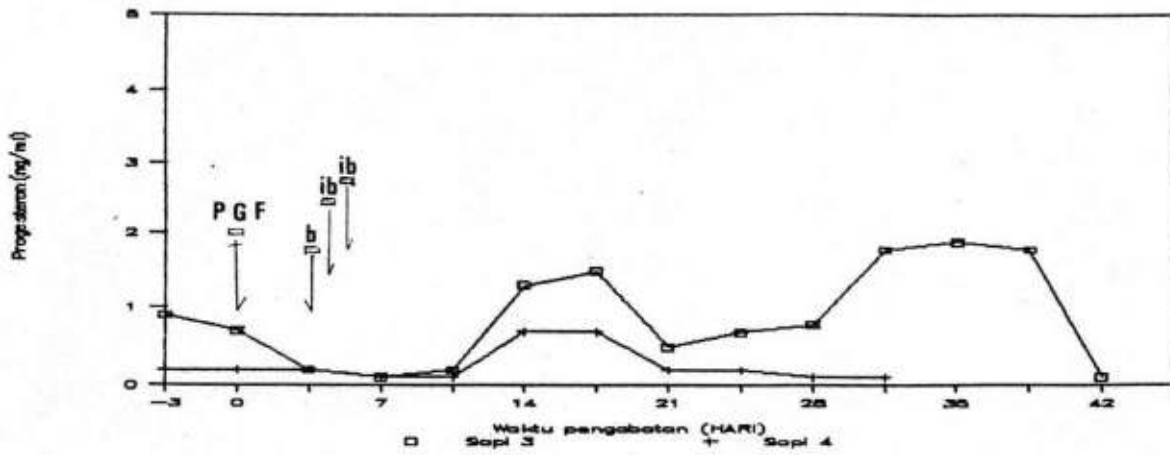


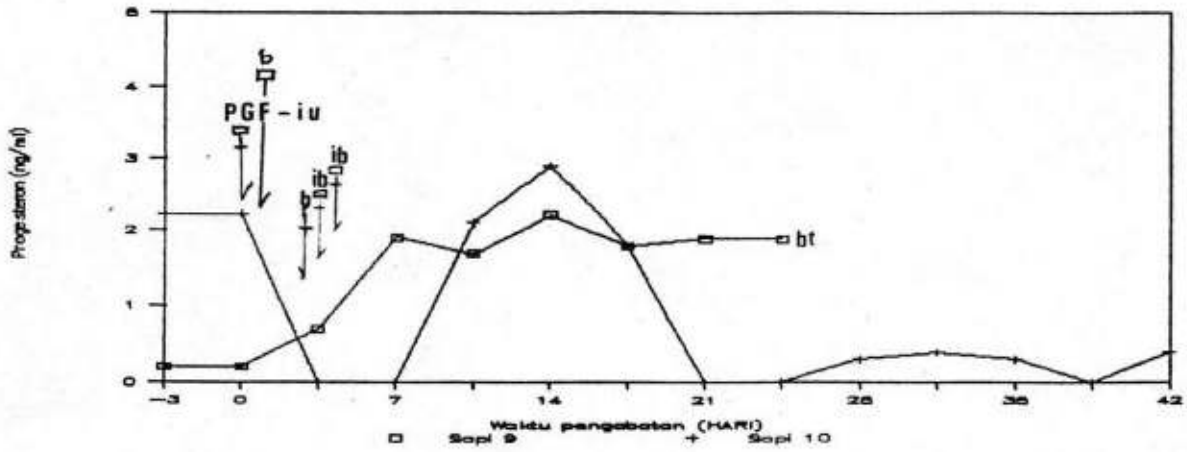




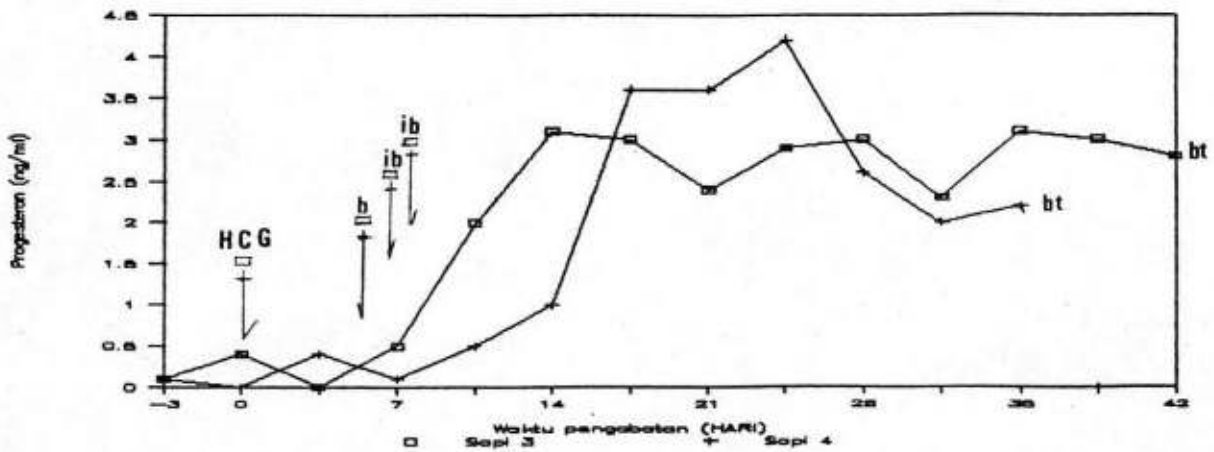
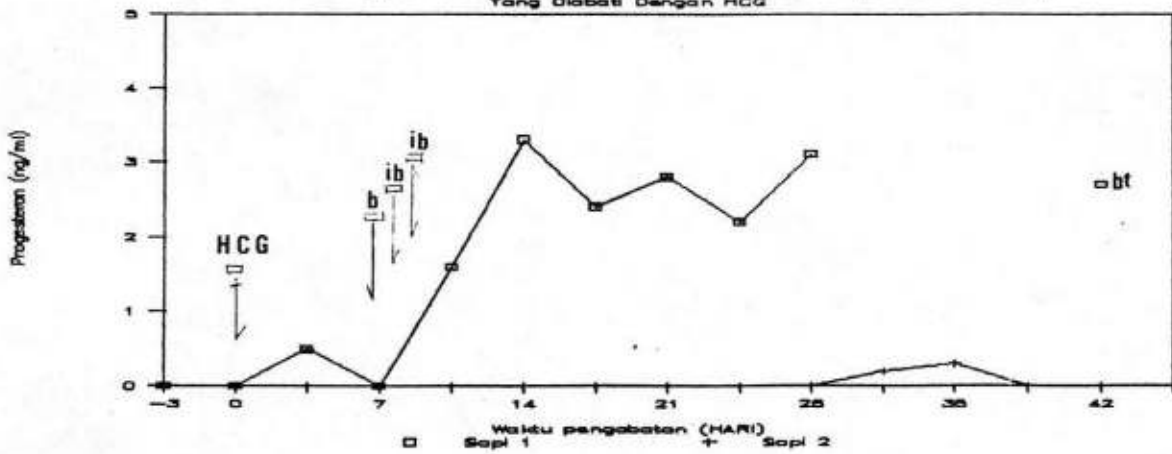
Gambar 22. Profil Progesteron Pada Sapi Yang Diobati Dengan PGF-iu

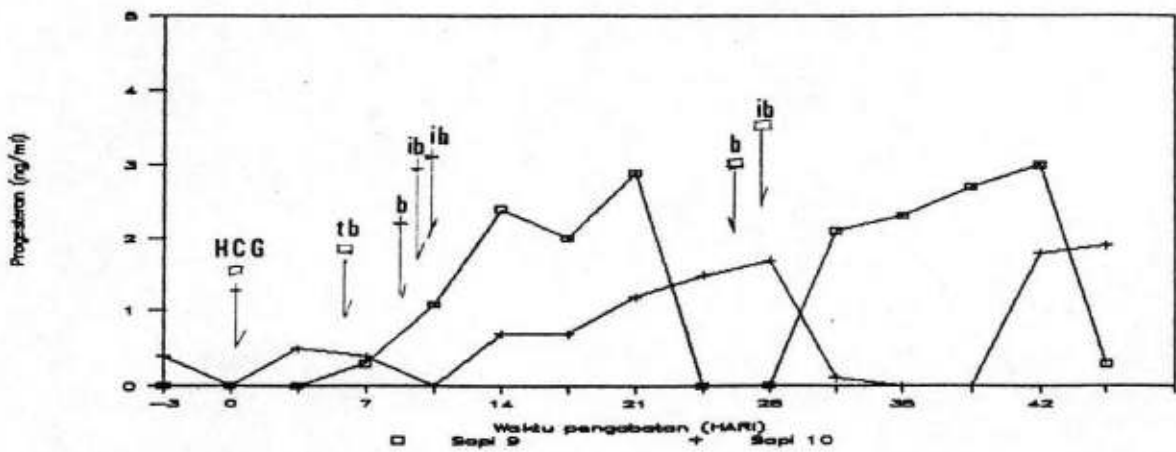
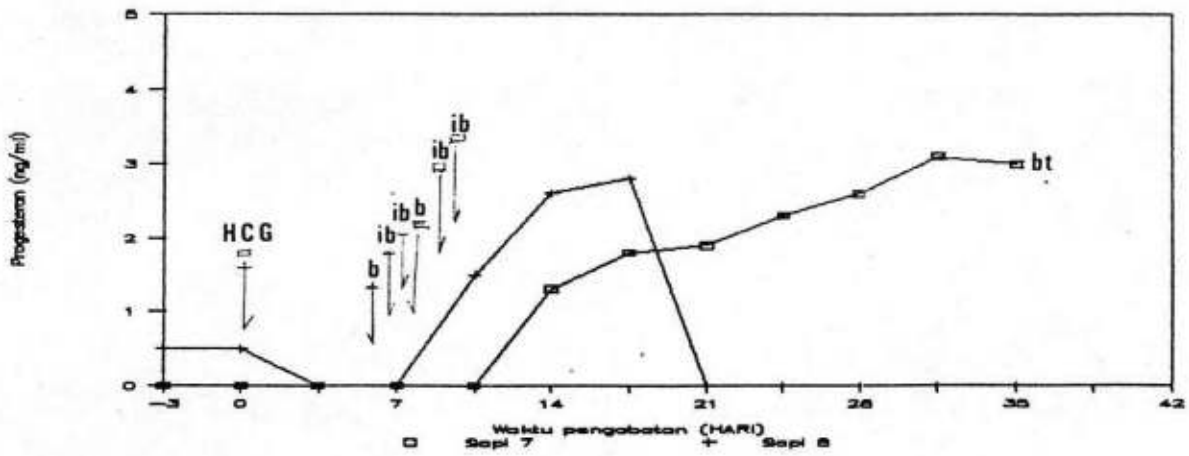
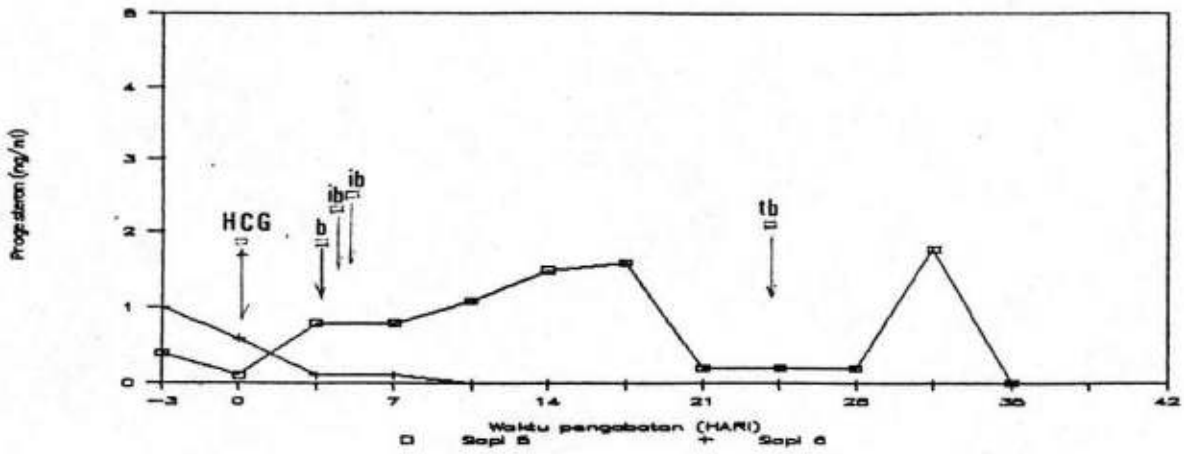




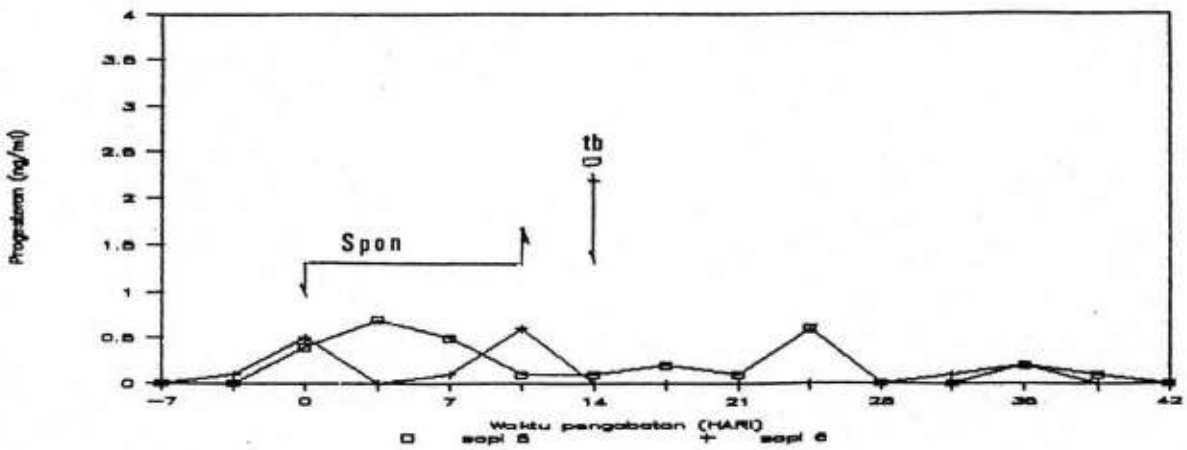
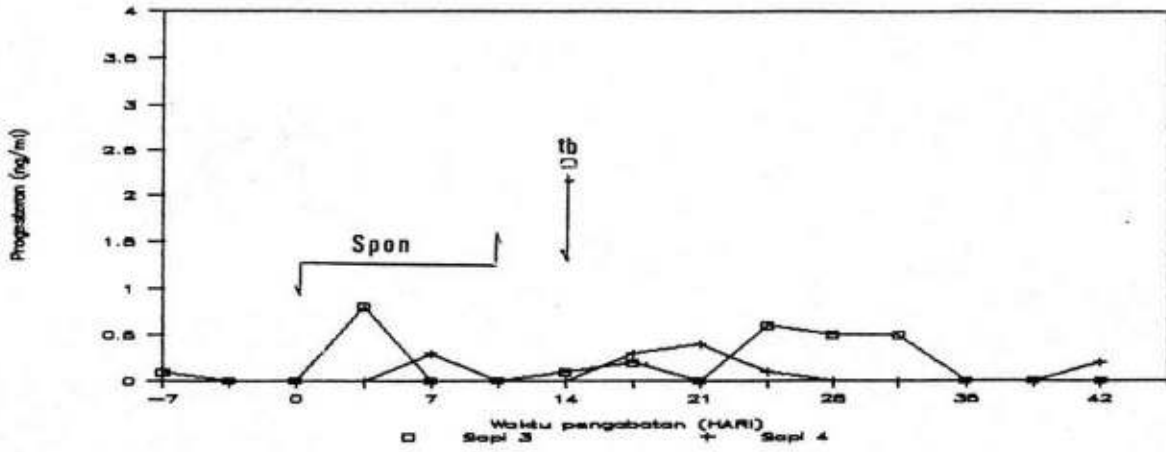
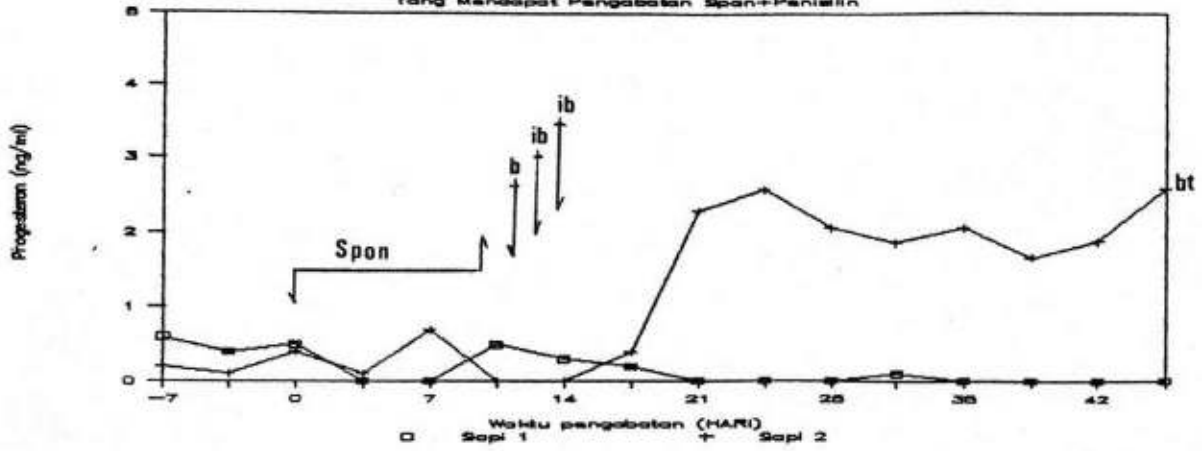


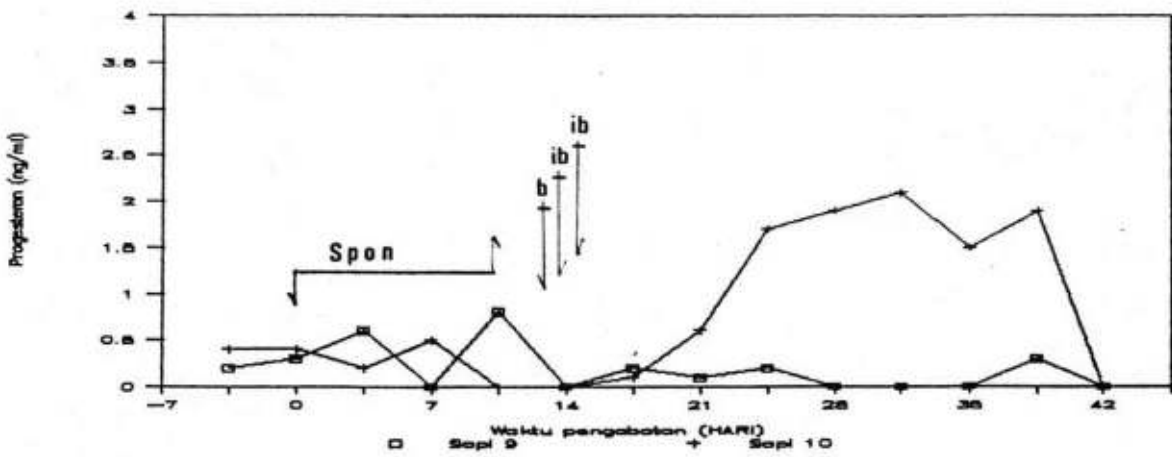
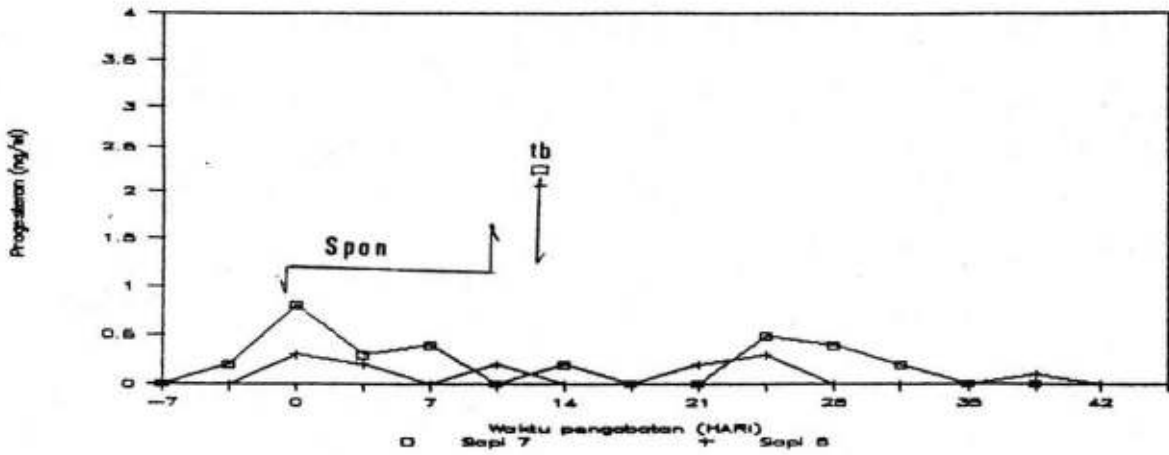
Gambar 23. Profil Progesteron pada Sapi Yang Diobati Dengan HCG



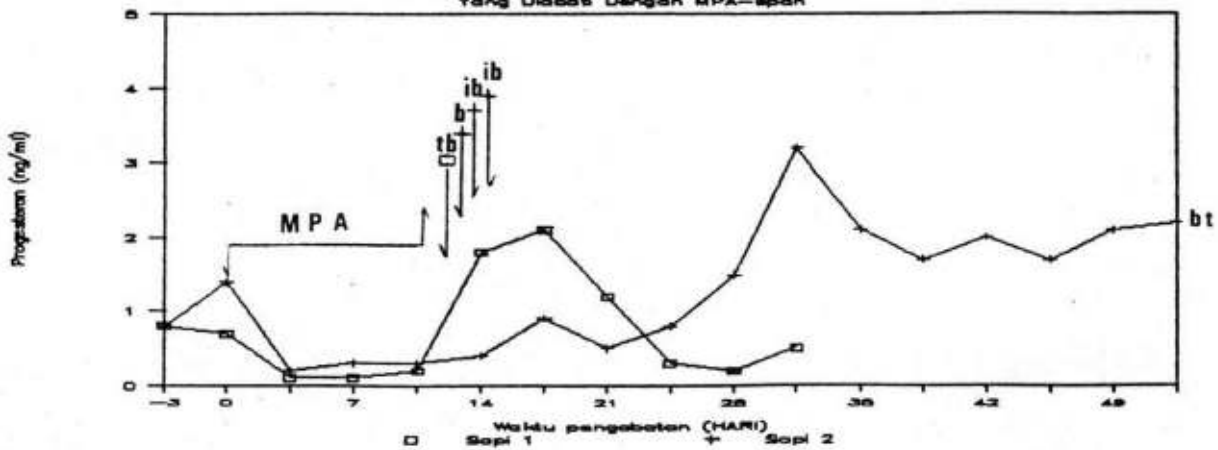


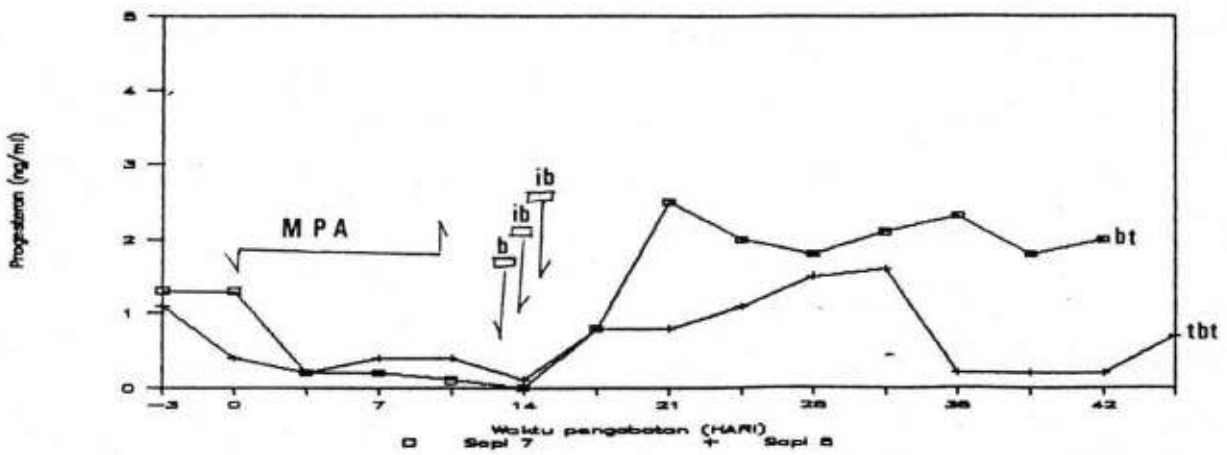
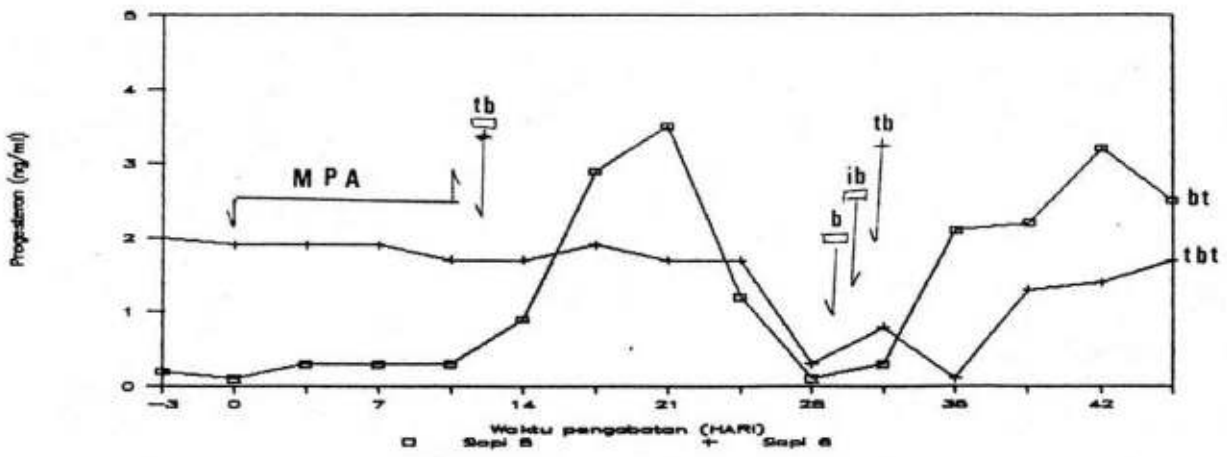
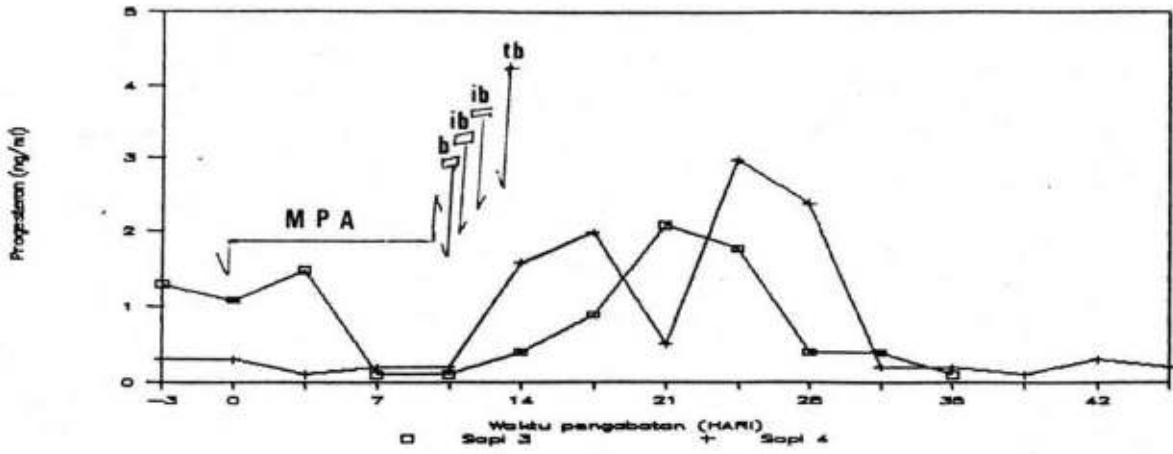
Gambar 24. Profil Progesteron Pada Sapi yang Mendapat Pengobatan Spon+Parialin

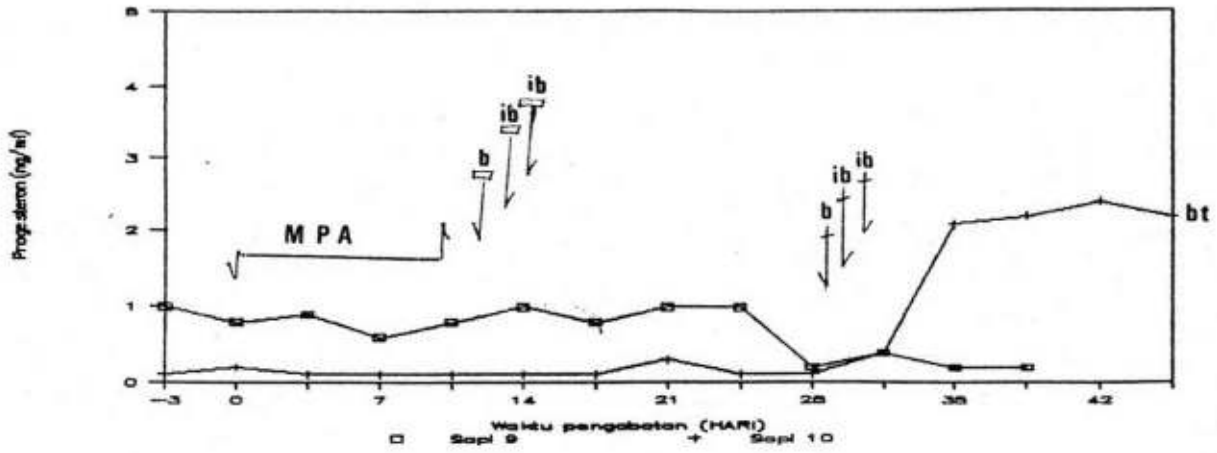




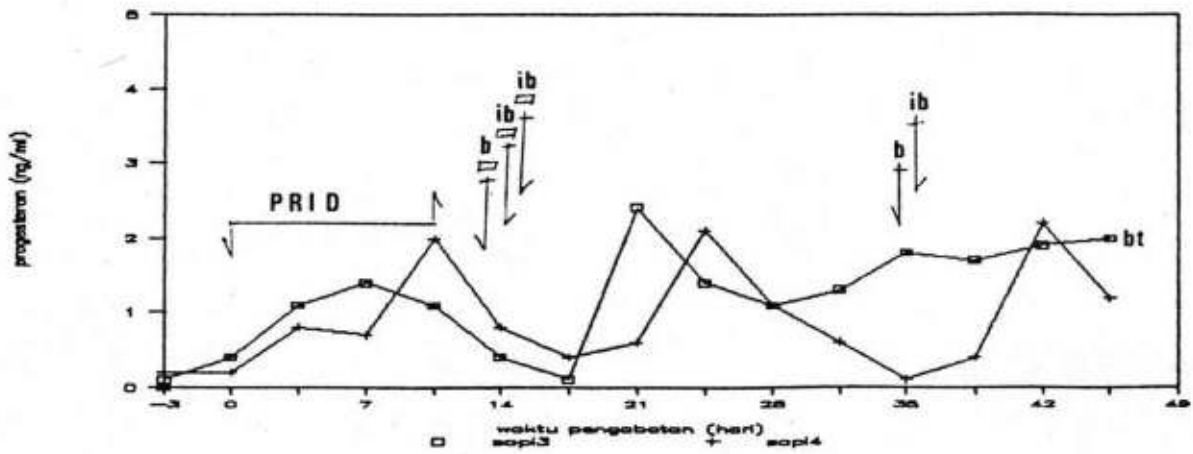
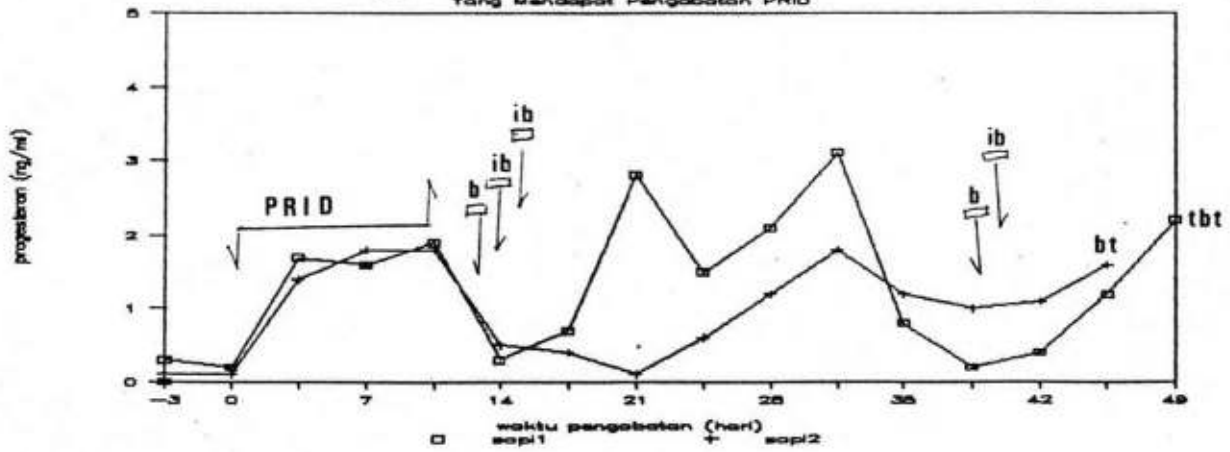
Gambar 25. Profil Progesteron Pada Sapi Yang Diobati Dengan MPA-spon



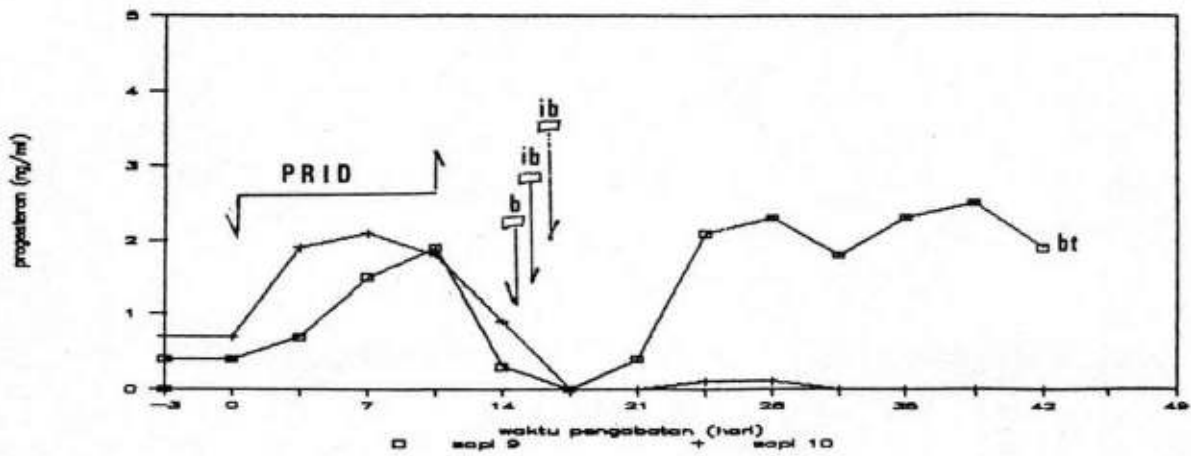
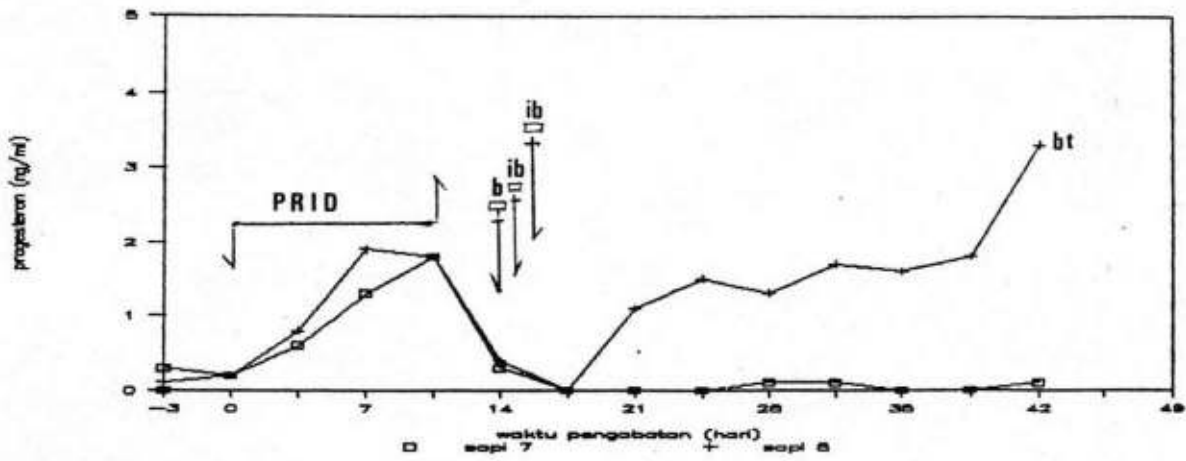
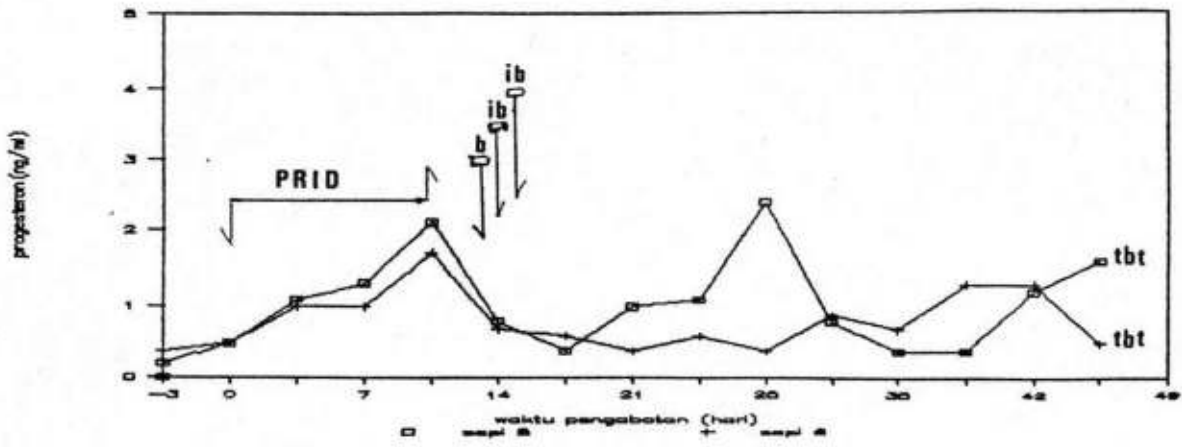




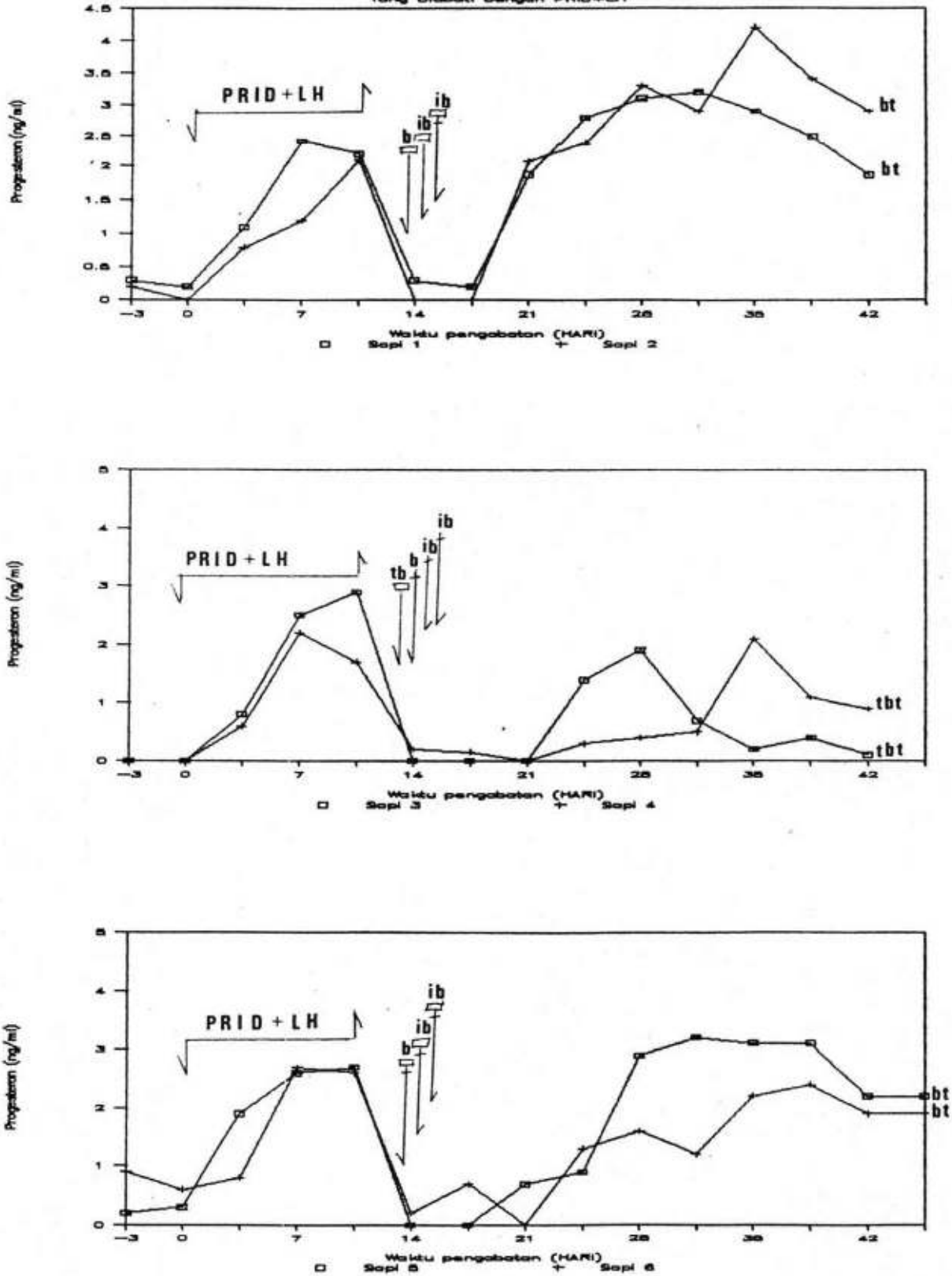
Gambar 26. Profil Progesteron Pada Sapi Yang Mendapat Pengobatan PRID

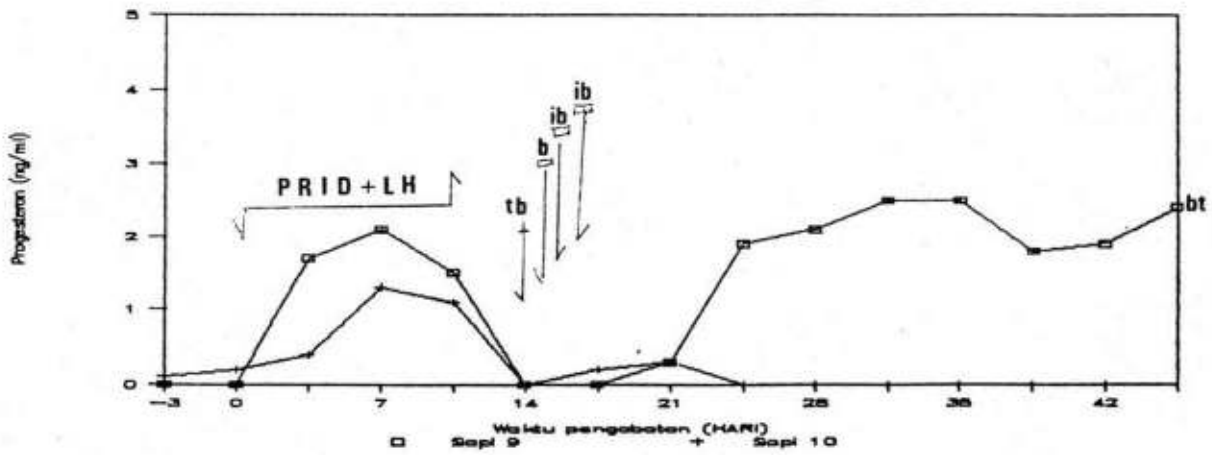
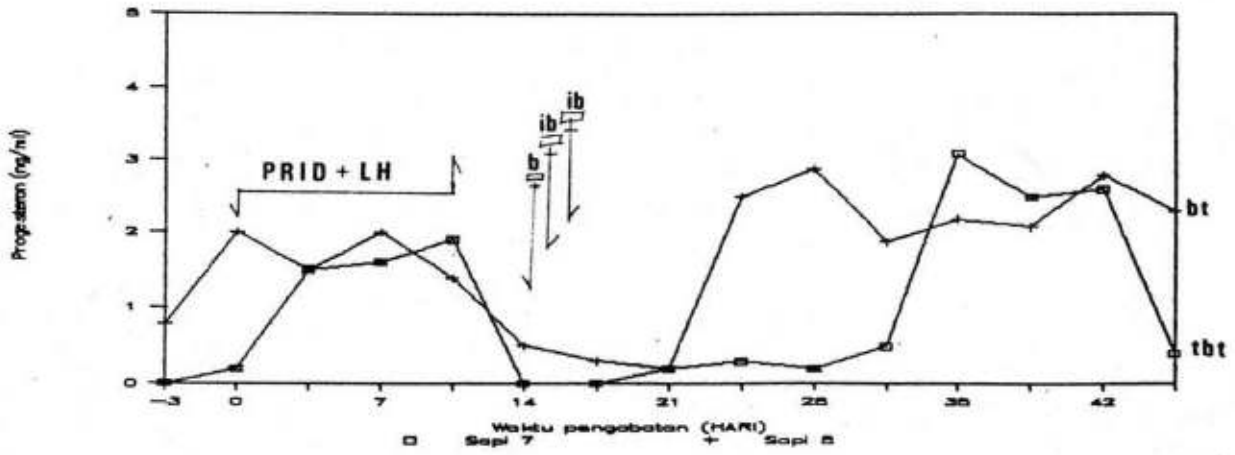




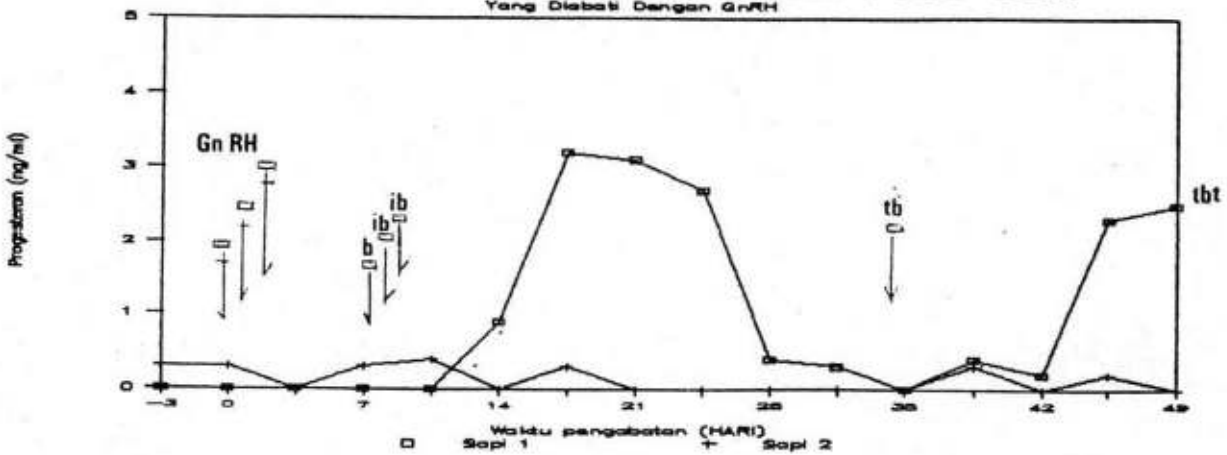


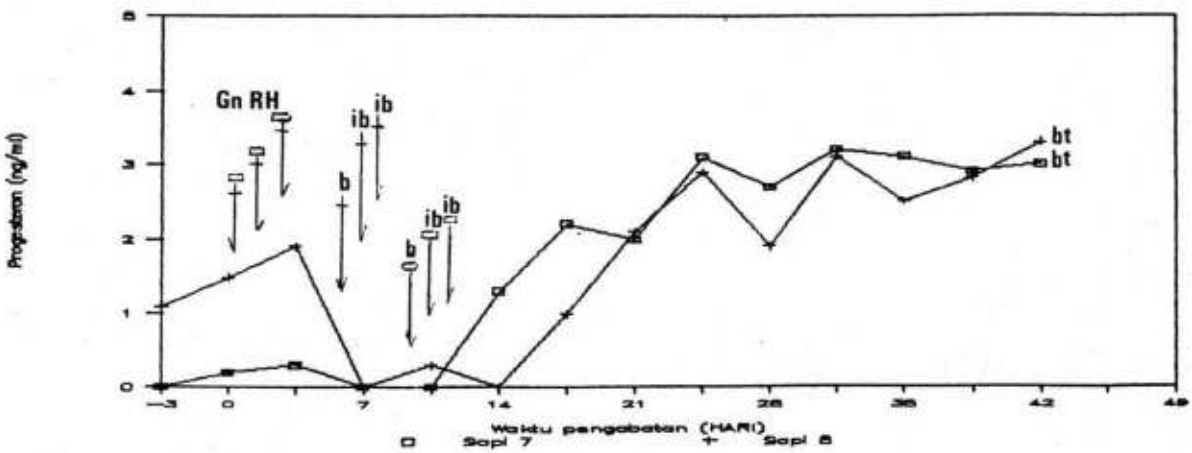
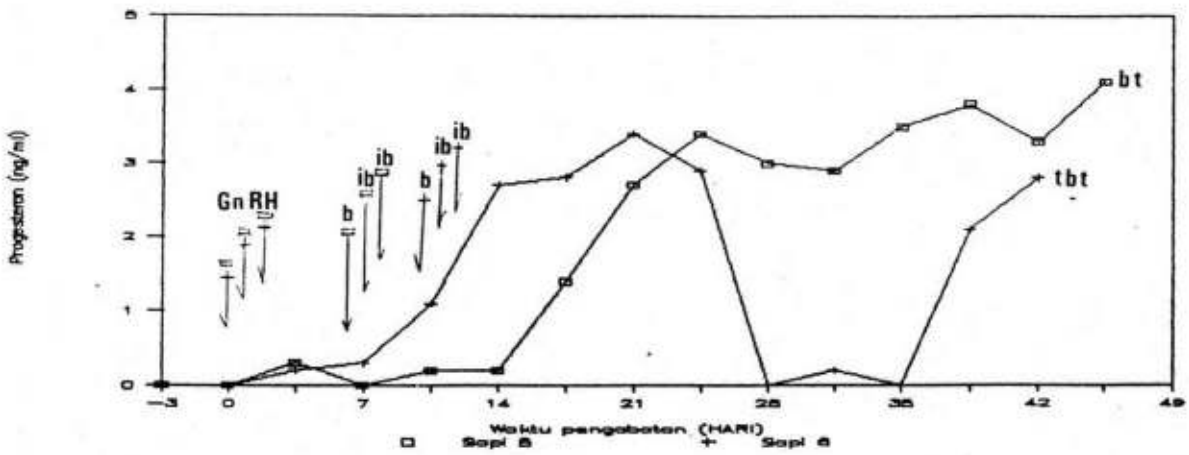
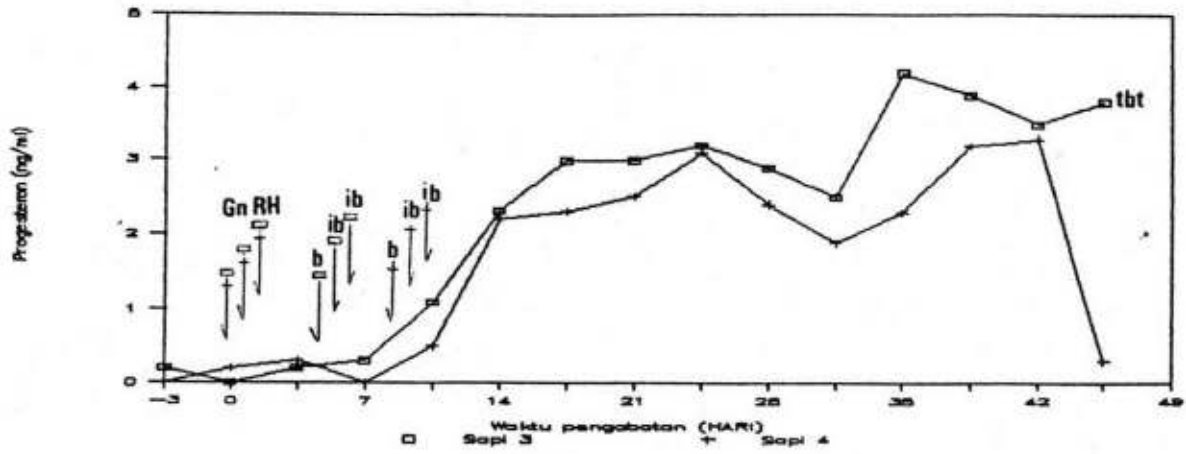
Gambar 27. Profil Progesteron Pada Sapi Yang Diobati Dengan PRID+LH

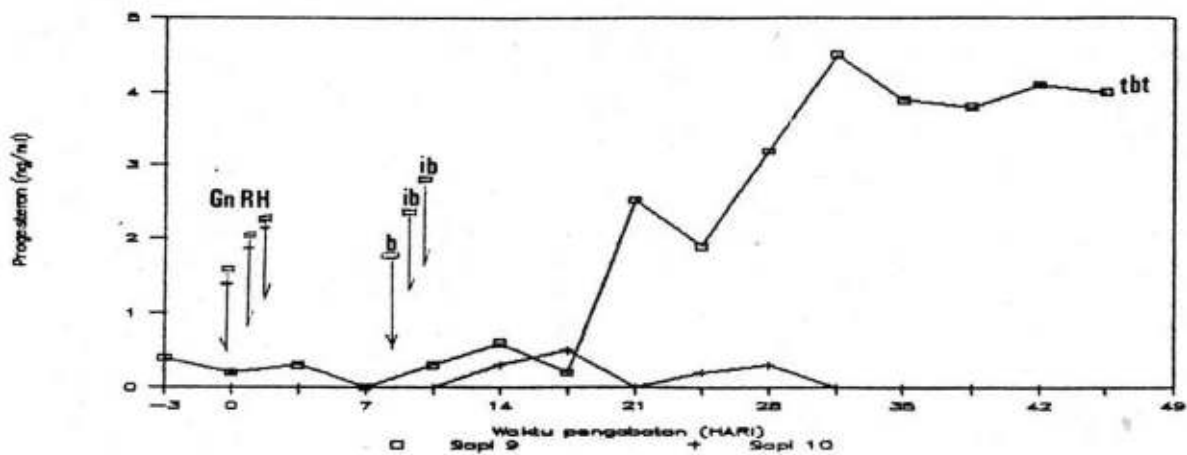




Gambar 28. Profil Progesteron Pada Sapi Yang Diobati Dengan GnRH









Gambar 29. Pemasangan Progesterone Releasing Intravaginal Device (PRID) di Dalam Vagina Anterior.



Gambar 30. Pencabutan Kembali PRID Setelah 10 Hari di Dalam Vagina Anterior .



Gambar 31. Pemasangan Medroxy Progesterone Acetate-spon di Dalam Vagina Anterior Dengan Bantuan Vaginoskop

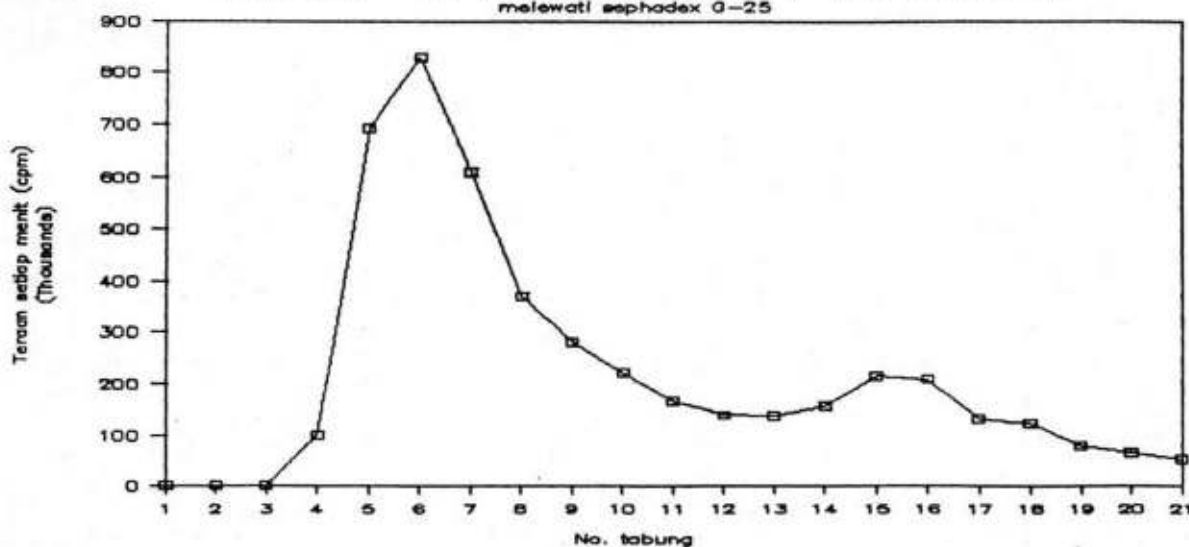


Gambar 32. Pencabutan Kembali MPA-spon Dengan Bantuan Snar Plastik Yang Dikaitkan Pada Spon.

Tabel XXIV. Hasil Pemisahan 125-I-LH Dengan 125-I Setelah Melewati Sephadex G-25

No. tabung	Teraan/menit
1	65
2	55
3	97
4	99469
5	693005
6	829605
7	609012
8	370893
9	282462
10	223255
11	167165
12	139530
13	137291
14	156973
15	215463
16	209364
17	130687
18	123459
19	78857
20	65273
21	52662

Gambar 33 . Ikatan 125-I-LH Setelah melewati sephadex G-25





Tabel XXV. Kadar Progesteron dan Lutenizing Hormon (ng/ml) Dalam Beberapa Waktu Pasca-lahir

No. Sapi	Pasca-Lahir (hari)							
	5		10		21		42	
	P4	LH	P4	LH	P4	LH	P4	LH
1	0	0.5	0	0.8	0.3	4.1	0.9	2.6
2	0	0.9	0.2	3.4	1.1	2.5	0.1	8.7
3	0	0.45	0	0.8	0	3.5	0.9	1.6
4	0.3	1.0	0.4	4.1	1.6	2.3	2.9	2.1
5	0	0	0	0	0	0.4	0.2	2.4
6	0	0	0	0.9	0.4	2.5	0	0.8
7	0	0.85	0	1.8	0	3.1	0	3.2
8	0	0.4	0.5	2.8	1.4	2.1	0.1	2.4
9	0	1.3	0	1.3	0	8.0	0	6.0
10	0	0.9	0.3	1.9	1.1	2.8	0.2	0.5

Tabel XXVI. Kadar LH Sebelum dan Sesudah Penyuntikkan GnRH intravena Yugularis

Waktu (menit)	Kadar LH (ng/ml)				
	Sapi No.1	Sapi No.2	Sapi No.3	Sapi No.4	Sapi No.5
-20	1.2	1.5	2.1	2.3	0
-10	1.5	1	2	1.1	0
0	1.2	1.3	1.9	1	0
+20	3.4	4.4	0	3.1	0.5
+40	3.3	3.3	1.6	3.4	1.4
+60	3.6	3	3.1	7.1	3.1
+80	9.8	4	12.5	5.8	4.2
+100	18	9.2	10	7	3.7
+120	16.5	14	9.8	11.4	3.2
+140	12	12.3	7.8	2.9	2.1
+160	10.5	9.8	8.4	1.8	2
+180	6.4	4.5	5.8	1.9	2.1

Tabel XXVII. Kadar Progesteron dalam Air susu, Plasma dan Serum Darah (ng/ml)

No.	Susu penuh	Susu bawah	Serum	Plasma
1	2.16	0.80	1.08	1.16
2	1.89	0.70	0.95	1.00
3	0.27	0.10	0.14	0.20
4	0.27	0.10	0.14	0.20
5	0.70	0.20	0.35	0.35
6	5.40	1.80	2.16	2.40
7	6.30	2.10	3.15	2.90
8	3.24	1.20	1.30	1.50
9	0.80	0.30	0.32	0.20
10	0.54	0.20	0.29	0.20
11	1.35	0.50	0.68	0.80
12	0.54	0.20	0.27	0.31
13	0.81	0.30	0.40	0.40
14	0.90	0.30	0.36	0.53
15	1.20	0.40	0.48	0.42
16	2.40	0.90	1.10	1.30
17	1.50	0.50	0.75	0.90
18	2.16	1.80	0.72	0.75
19	4.50	1.50	1.80	2.00
20	11.20	3.20	3.73	3.50
21	7.35	2.10	2.45	2.70
22	5.10	1.70	2.55	1.90
23	6.00	2.00	3.00	3.20
24	5.40	1.70	2.16	2.00
25	6.30	2.10	2.10	2.00
26	6.80	2.20	2.70	1.90
27	0.27	0.10	0.14	0.20
28	0.60	0.20	0.30	0.25
29	0.60	0.20	0.35	0.30
30	0.40	0.10	0.20	0.35
31	0.20	0.00	0.10	0.25
32	0.36	0.10	0.00	0.25
33	0.35	0.10	0.20	0.30
34	0.27	0.10	0.20	0.15
35	0.90	0.30	0.40	0.40
36	0.30	0.10	0.15	0.15
37	0.35	0.10	0.15	0.00
38	1.30	0.40	0.40	0.20
39	6.40	2.10	2.50	2.60
40	6.60	2.20	2.70	2.50
41	8.40	2.40	0.30	2.60
42	6.70	2.20	3.10	2.90

## Lampiran 1.

Cara Membuat Bufer Untuk Proses Labeling I + Protein <sup>125</sup>

## 1[a]. Sodium Posfat Buffer 0,5 M / ph 7.5.

Na<sub>2</sub>HPO<sub>4</sub>        5,68 g + 80 ml aquades

NaH<sub>2</sub>PO<sub>4</sub>H<sub>2</sub>O    1,38 g + 20 ml aquades

---

Campurkan sampai homogen = 100 ml

Koreksi Ph ----- 7,5

## [b]. Sodium posfat Buffer 0,05 M / Ph 7,5 :

2 ml larutan (a) + 18 ml aquades.

## [c]. Sodium posfat bufer 0,01 M / Ph 7.0 (PBS) :

Na<sub>2</sub>HPO<sub>4</sub>        0,852 g + 600 ml aquades

NaH<sub>2</sub>PO<sub>4</sub>.H<sub>2</sub>O 0,552 g + 400 ml aquades

---

Campurkan sampai homogen = 1000 ml

Tambahkan    9 g Na. Chlorida

                  1 g Na. azida

Koreksi Ph. menjadi 7,0

## Cara membuat larutan :

## 2[a]. Chloramin T (2 mg/ml) :

10 mg Chloramin T + 5 ml larutan 0,05 M PBS Ph. 7,5

## (b) Natrium Metabisulfit (2mg/ml)

10 mg Na. metabisulfit + 5 ml larutan 0,05 M PBS Ph.7,5

## Lampiran 2.

Cara Membuat Larutan Untuk Pemisahan <sup>125</sup>I-LH dengan <sup>125</sup>I  
Bebas.

[1]. 0,01 M PBSG :

0,50 g Gellatin + 500 ml Larutan 0,01 M PBS Ph. 7,0

[2]. Larutan transfer (16% sukrose):

16 g sukrose + 100 ml PBSG (larutan [1]).

[3]. Larutan Pembilas (8% sukrose):

8 g sukrose + 100 ml PBSG (larutan [1]).

[4]. Sephadex G-25 :

50 g sephadex G-25 + 400 ml larutan PBSG (larutan [1])

lalu didiamkan minimal selama 12 jam pada 4 °C, atau 1 jam pada suhu kamar.

Lampiran 3.

Data Asli Kejadian Birahi Pada Daur I & II  
Sapi di Surabaya, Grati & Puspo

Daerah	Surabaya	Grati	Puspo
waktu			
Daur I (%)	25,9	25	10
Daur II (%)	73,3	76,6	55,5

3 1

----- CROSSTAB / CHI-SQUARE TESTS -----

Transformasi Arcsin terjadinya birahi pd daur I & II

OBSERVED FREQUENCIES

	1	2	3	TOTAL
1	31	30	18	79
2	59	61	48	168
TOTAL	90	91	66	247

CHI-SQUARE = .964, D.F. = 2, PROB. = .6175

Lampiran 3. a

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: B:P40CYCLE LABEL: Beda Prog pda daur bir I & II  
NUMBER OF CASES: 280 NUMBER OF VARIABLES: 2

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda rata-rata kadar P4 daur I & II

	GROUP 1	GROUP 2
MEAN =	1.0964	1.5113
STD. DEV. =	1.0805	1.2388
N =	280	168
	DIFFERENCE =	-.4149
STD. ERROR OF DIFFERENCE =		.1115

T = -3.7215 (D.F. = 446) GROUP 1: daur I  
GROUP 2: Daur II

PROB. = 1.117E-04

## Lampiran 4.

## --- CROSSTAB / CHI-SQUARE TESTS ---

Jumlah sapi birahi di Sby,Grt &amp; Puspo 85 hr P-L

## OBSERVED FREQUENCIES

	1	2	3	TOTAL
1	22	18	5	45
2	8	12	25	45
TOTAL	30	30	30	90

CHI-SQUARE = 21.067, D.F. = 2, PROB. = 2.663E-05

## Lampiran 5.

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: B:OVULPP LABEL: Ovulasi pertama pasca-lahir  
 NUMBER OF CASES: 26 NUMBER OF VARIABLES: 3

## ONE-WAY ANOVA

Beda daya ovulasi P-L di Sby, Grati &amp; Puspo

GROUP	MEAN	N
1	30.808	26
2	39.500	24
3	29.077	13
GRAND MEAN	33.762	63

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	1302.467	2	651.234	1.994	.1451
WITHIN	19594.962	60	326.583		
TOTAL	20897.429	62			

## Lampiran 6.

## Uji Normalitas Panjang Daur Birahi Pertama Pasca-lahir (hari)

Panjang daur birahi (hari)	Frekwensi (f)
12-14	4
15-17	12
18-20	14
21-23	7
24-26	2
27-29	1
Jumlah	40

Rata rata = 18,35

Sd = 3,17

## Frekwensi pengamatan dan yang diharapkan

Batas kelas X	Z untuk Batas kelas	Luas tiap kelas interval	Frekwensi diharapkan	Frekwensi pengamatan
11,5	-2,13			
14,5	-1,20	0,0964	5,78	4
17,5	-0,26	0,2823	11,29	12
20,5	0,67	0,3512	14,05	14
23,5	1,60	0,1966	7,86	7
26,5	2,53	0,0491	1,96	2
29,5	3,46	0,0054	0,22	1

$$\chi^2 = 3,45 \quad ; \quad \chi^2 (0,95; 3) = 7,81$$

Jadi distribusi sampling adalah Normal.

## Lampiran 7.

## Panjang Daur Birahi Ke dua Pasca-lahir (hari)

Lama daur birahi (hari)	Frekwensi (f)
13-15	1
16-18	6
19-21	8
22-24	8
25-27	0
28-30	1
Jumlah	24

Rata rata = 20,22 ; Sd = 3,3 ; 24

## Frekwensi Pengamatan dan Yang Diharapkan

Batas Kelas X	Z untuk Batas kelas	Luas tiap Kelas interval	Frekwensi Diharapkan	Frekwensi Pengamatan
12,5	-2,64			
15,5	-1,68	0,0424	1,02	1
18,5	-0,70	0,1955	4,69	6
21,5	0,28	0,3683	8,84	8
24,5	1,24	0,2822	6,77	8
27,5	2,20	0,0936	2,25	0
30,5	3,17	0,0131	0,31	1

$\chi^2 = 4,46$  ;  $\chi^2 (0,95; 3) = 7,81$

Jadi Distribusi sampling adalah Normal



Lampiran 8.

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:DAUR1&2 LABEL: panj daur 1 &2  
NUMBER OF CASES: 40 NUMBER OF VARIABLES: 2

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda panjang daur birahi I& II

		GROUP 1	GROUP 2	
MEAN =		18.3500	20.6667	
STD. DEV. =		3.2149	3.1021	
N =		40	24	
		DIFFERENCE =	-2.3167	
STD. ERROR OF DIFFERENCE =			.8194	
T =	-2.8272	(D.F. = 62)		GROUP 1: daur1 GROUP 2: daur2

PROB. = 3.157E-03

Lampiran 9.

----- CROSSTAB / CHI-SQUARE TESTS -----

Aktifitas ovarium hingga 21 hr dan 60 hr P-L

OBSERVED FREQUENCIES

		1	2	3	TOTAL
1		7	4	3	14
2		24	16	9	49
TOTAL		31	20	12	63

CHI-SQUARE = .113, D.F. = 2, PROB. = .9451

## Lampiran 10.

----- CROSSTAB / CHI-SQUARE TESTS -----  
 Jumlah sapi birahi di Sby, Grt & Puspo 85 hr P-L

## OBSERVED FREQUENCIES

	1	2	3	TOTAL
1	22	18	5	45
2	8	12	25	45
TOTAL	30	30	30	90

CHI-SQUARE = 21.067, D.F. = 2, PROB. = 2.663E-05

## Lampiran 11.

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:OVULPP LABEL: Ovulasi pertama pasca-lahir  
 NUMBER OF CASES: 26 NUMBER OF VARIABLES: 3

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda daya ovulasi P-L Surabaya dan Grati

	GROUP 1	GROUP 2
MEAN =	30.8077	39.5000
STD. DEV. =	16.5433	20.3683
N =	26	24
DIFFERENCE =	-8.6923	
STD. ERROR OF DIFFERENCE =	5.2298	

T = -1.6621 (D.F. = 48) GROUP 1: sby  
 GROUP 2: grati

PROB. = .0515

## Lampiran 11 1.

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:OVULPP LABEL: Ovulasi pertama pasca-lahir  
 NUMBER OF CASES: 26 NUMBER OF VARIABLES: 3

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda daya ovulasi P-L Grati dan Puspo

	GROUP 1	GROUP 2
MEAN =	39.5000	29.0769
STD. DEV. =	20.3683	16.3578
N =	24	13
DIFFERENCE =	10.4231	
STD. ERROR OF DIFFERENCE =	6.5735	

T = 1.5856 (D.F. = 35) GROUP 1: grati  
 GROUP 2: puspo

PROB. = .0609

## Lampiran 12.

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:SCORE LABEL: Score Reproduktifitas  
 NUMBER OF CASES: 31 NUMBER OF VARIABLES: 3

## ONE-WAY ANOVA

## Klasifikasi status reproduksi

GROUP	MEAN	N
1	2.100	30
2	1.733	30
3	.567	30
GRAND MEAN	1.467	90

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	38.467	2	19.233	18.606	1.875E-07
WITHIN	89.933	87	1.034		
TOTAL	128.400	89			

## 12.1

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:SCORE LABEL: Score Reproduktifitas  
 NUMBER OF CASES: 31 NUMBER OF VARIABLES: 3

## DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

## Beda status reproduksi Sby dan Grati

	GROUP 1	GROUP 2
MEAN =	2.1000	1.7333
STD. DEV. =	1.0289	1.1427
N =	30	30
	DIFFERENCE =	.3667
STD. ERROR OF DIFFERENCE =		.2807

T = 1.3061 (D.F. = 58) GROUP 1: sby  
 GROUP 2: grat

PROB. = .0983

12.2

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:SCORE LABEL: Score Reproduktifitas  
 NUMBER OF CASES: 31 NUMBER OF VARIABLES: 3

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda status reproduksi Sby dan Puspo

	GROUP 1	GROUP 2	
MEAN =	2.1000	.5667	
STD. DEV. =	1.0289	.8584	
N =	30	30	
	DIFFERENCE =	1.5333	
STD. ERROR OF DIFFERENCE =		.2446	
T =	6.2678	(D.F. = 58)	GROUP 1: sby GROUP 2: puspo
PROB. =	2.455E-08		

12.3

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:SCORE LABEL: Score Reproduktifitas  
 NUMBER OF CASES: 31 NUMBER OF VARIABLES: 3

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda status reproduksi Grati & Puspo

	GROUP 1	GROUP 2	
MEAN =	1.7333	.5667	
STD. DEV. =	1.1427	.8584	
N =	30	30	
	DIFFERENCE =	1.1667	
STD. ERROR OF DIFFERENCE =		.2609	
T =	4.4712	(D.F. = 58)	GROUP 1: grat GROUP 2: puspo
PROB. =	1.836E-05		

## Lampiran 13.

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

## ONE-WAY ANOVA

kadar P4 pada saat IB dalam 4 keadaan

GROUP	MEAN	N
1	.293	67
2	.942	33
3	.925	12
4	.325	8
GRAND MEAN	.537	120

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	11.594	3	3.865	8.207	5.328E-05
WITHIN	54.624	116	.471		
TOTAL	66.219	119			

## 13.1

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

## DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Kadar P4 saat IB pada yang bunting dan tidak

	GROUP 1	GROUP 2
MEAN =	.2925	.9424
STD. DEV. =	.3386	1.0155
N =	67	33
DIFFERENCE =		-.6499
STD. ERROR OF DIFFERENCE =		.1368

T = -4.7496 (D.F. = 98) GROUP 1: bunting1  
 GROUP 2: tdkbuni

PROB. = 3.485E-06

13.2

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 saat IB pd tidak bunting dan embrio mati dini

	GROUP 1	GROUP 2	
MEAN =	.9424	.9250	
STD. DEV. =	1.0155	1.1161	
N =	33	12	
	DIFFERENCE =	.0174	
STD. ERROR OF DIFFERENCE =		.3513	
T =	.0496	(D.F. = 43)	GROUP 1: tdkbun1 GROUP 2: eed1
PROB. =	.4803		

13.3

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 saat IB Pada embrio mati dini dan mati lebih lambat

	GROUP 1	GROUP 2	
MEAN =	.9250	.3250	
STD. DEV. =	1.1161	.2252	
N =	12	8	
	DIFFERENCE =	.6000	
STD. ERROR OF DIFFERENCE =		.4034	
T =	1.4875	(D.F. = 18)	GROUP 1: eed1 GROUP 2: eed4
PROB. =	.0771		

13.4

----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

ONE-WAY ANOVA

Kadar P4 pd kelompok bunting dari 3 waktu sampling

GROUP	MEAN	N
1	.293	67
2	2.285	67
3	3.097	67
GRAND MEAN	1.892	201

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	279.045	2	139.522	338.503	.000E+00
WITHIN	81.611	198	.412		
TOTAL	360.656	200			

13.5

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi bunting saat IB dgn 22 hari setelah IB

	GROUP 1	GROUP 2
MEAN =	.2925	2.2851
STD. DEV. =	.3386	.8083
N =	67	67
DIFFERENCE =	-1.9925	
STD. ERROR OF DIFFERENCE =	.1071	

T = -18.6101 (D.F. = 132) GROUP 1: bunting1  
GROUP 2: bunting2

PROB. = 5.000E-14

13.6

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

, P4 sapi bunting saat IB dgn 29 hari setelah IB

	GROUP 1	GROUP 2
MEAN =	.2925	3.0970
STD. DEV. =	.3386	.6845
N =	67	67
	DIFFERENCE =	-2.8045
STD. ERROR OF DIFFERENCE =		.0933

T = -30.0616 (D.F. = 132) GROUP 1: bunting1  
GROUP 2: bunting3

PROB. = 5.000E-14

13.7

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi bunting saat 22 dan 29 setelah IB

	GROUP 1	GROUP 2
MEAN =	2.2851	3.0970
STD. DEV. =	.8083	.6845
N =	67	67
	DIFFERENCE =	-.8119
STD. ERROR OF DIFFERENCE =		.1294

T = -6.2746 (D.F. = 132) GROUP 1: bunting2  
GROUP 2: bunting3

PROB. = 2.328E-09



13.8

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

## ONE-WAY ANOVA

P4 sapi tak bunting pada saat IB,22 dan 29 hari

GROUP	MEAN	N
1	.942	33
2	.273	33
3	.376	33
GRAND MEAN	.530	99

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	8.582	2	4.291	9.029	2.553E-04
WITHIN	45.627	96	.475		
TOTAL	54.209	98			

13.9

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi tak bunting saat IB dan 22 hari

	GROUP 1	GROUP 2
MEAN =	.9424	.2727
STD. DEV. =	1.0155	.1908
N =	33	33
DIFFERENCE =		.6697
STD. ERROR OF DIFFERENCE =		.1799

T = 3.7232 (D.F. = 64) GROUP 1: tdkbun1  
 GROUP 2: tdkbun2

PROB. = 2.088E-04

13.10

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi tak bunting saat IB dan 29 hari

	GROUP 1	GROUP 2	
MEAN =	.9424	.3758	
STD. DEV. =	1.0155	.5985	
N =	33	33	
	DIFFERENCE =	.5667	
STD. ERROR OF DIFFERENCE =		.2052	
T =	2.7617	(D.F. = 64)	GROUP 1: tdkbun1 GROUP 2: tdkbun3

PROB. = 3.748E-03

13.11

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi tak bunting 22 dan 29 hari setelah IB

	GROUP 1	GROUP 2	
MEAN =	.2727	.3758	
STD. DEV. =	.1908	.5985	
N =	33	33	
	DIFFERENCE =	-.1030	
STD. ERROR OF DIFFERENCE =		.1093	
T =	-.9422	(D.F. = 64)	GROUP 1: tdkbun2 GROUP 2: tdkbun3

PROB. = .1748

## 13.12.

## ANALYSIS OF VARIANCE

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

## ONE-WAY ANOVA

P4 sapi mengalami embrio mati dini < 30 hari

GROUP	MEAN	N
1	.925	12
2	3.383	12
3	.283	12
GRAND MEAN	1.531	36

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	64.261	2	32.130	27.644	8.874E-08
WITHIN	38.356	33	1.162		
TOTAL	102.616	35			

## 13.13

## HYPOTHESIS TESTS FOR MEANS

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi embrionya mati dini <30 hari saat IB ,22hari

	GROUP 1	GROUP 2
MEAN =	.9250	3.3833
STD. DEV. =	1.1161	1.4899
N =	12	12
DIFFERENCE =	-2.4583	
STD. ERROR OF DIFFERENCE =	.5374	

T = -4.5746 (D.F. = 22) GROUP 1: eed1  
 GROUP 2: eed2

PROB. = 7.412E-05

13.14

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi embrionya mati < 30 hari saat IB, 29 hari

	GROUP 1	GROUP 2	
MEAN =	.9250	.2833	
STD. DEV. =	1.1161	.1467	
N =	12	12	
	DIFFERENCE =	.6417	
STD. ERROR OF DIFFERENCE =		.3250	
T =	1.9746	(D.F. = 22)	GROUP 1: eed1 GROUP 2: eed3

PROB. = .0305

13.15

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi embrionya mati < 30 hari, 22 dan 29hari

	GROUP 1	GROUP 2	
MEAN =	3.3833	.2833	
STD. DEV. =	1.4899	.1467	
N =	12	12	
	DIFFERENCE =	3.1000	
STD. ERROR OF DIFFERENCE =		.4322	
T =	7.1732	(D.F. = 22)	GROUP 1: eed2 GROUP 2: eed3

PROB. = 1.718E-07

13.16

----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

ONE-WAY ANOVA

P4 sapi embrionya mati <60 hari

GROUP	MEAN	N
1	.325	8
2	2.488	8
3	3.063	8
GRAND MEAN	1.958	24

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	33.336	2	16.668	62.255	1.489E-09
WITHIN	5.623	21	.268		
TOTAL	38.958	23			

13.17

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi embrionya mati <60 hari saat IB dan 22 hari

	GROUP 1	GROUP 2
MEAN =	.3250	2.4875
STD. DEV. =	.2252	.6917
N =	8	8
DIFFERENCE =	-2.1625	
STD. ERROR OF DIFFERENCE =	.2572	

T = -8.4087 (D.F. = 14) GROUP 1: eed4  
GROUP 2: eed5

PROB. = 3.816E-07

13.18

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi embrionya mati <60 hari saat IB dan 29 hari

	GROUP 1	GROUP 2	
MEAN =	.3250	3.0625	
STD. DEV. =	.2252	.5236	
N =	8	8	
	DIFFERENCE =	-2.7375	
STD. ERROR OF DIFFERENCE =		.2015	
T =	-13.5855	(D.F. = 14)	GROUP 1: eed4 GROUP 2: eed6
PROB. =	9.365E-10		

13.19

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sapi embrionya mati < 60 hari , 22 dan 29 hari

	GROUP 1	GROUP 2	
MEAN =	2.4875	3.0625	
STD. DEV. =	.6917	.5236	
N =	8	8	
	DIFFERENCE =	-.5750	
STD. ERROR OF DIFFERENCE =		.3067	
T =	-1.8748	(D.F. = 14)	GROUP 1: eed5 GROUP 2: eed6
PROB. =	.0409		

13.20

----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

ONE-WAY ANOVA

P4 saat 22 haripada sapi bunting, tidak, mati dini&mati <60 hari

GROUP	MEAN	N
1	2.285	67
2	.273	33
3	3.383	12
4	2.488	8
GRAND MEAN	1.855	120

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	126.241	3	42.080	67.743	1.300E-13
WITHIN	72.056	116	.621		
TOTAL	198.297	119			

13.21

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 saat 22 hari sapi bunting dan tidak bunting

	GROUP 1	GROUP 2
MEAN =	2.2851	.2727
STD. DEV. =	.8083	.1908
N =	67	33
DIFFERENCE =	2.0123	
STD. ERROR OF DIFFERENCE =	.1430	
T =	14.0752	(D.F. = 98)
	GROUP 1: bunting2	
	GROUP 2: tdkbun2	
PROB. =	.000E+00	

13.22

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 saat 22 hari sapi tidak bunting dan embrio mati <30 hari

	GROUP 1	GROUP 2	
MEAN =	.2727	3.3833	
STD. DEV. =	.1908	1.4899	
N =	33	12	
	DIFFERENCE =	-3.1106	
STD. ERROR OF DIFFERENCE =		.2600	
T =	-11.9633	(D.F. = 43)	GROUP 1: tdkbun2 GROUP 2: eed2
PROB. =	.000E+00		

13.23

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 saat 22 hari pada sapi embrio mati <30 dan mati <60 hari

	GROUP 1	GROUP 2	
MEAN =	3.3833	2.4875	
STD. DEV. =	1.4899	.6917	
N =	12	8	
	DIFFERENCE =	.8958	
STD. ERROR OF DIFFERENCE =		.5669	
T =	1.5803	(D.F. = 18)	GROUP 1: eed2 GROUP 2: eed5
PROB. =	.0657		



13.24

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

## ONE-WAY ANOVA

P4 saat 29 hari sapi bunting, tidak embrio mati <30 dan, <60 hari

GROUP	MEAN	N
1	3.097	67
2	.376	33
3	.283	12
4	3.063	8
GRAND MEAN	2.065	120

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	211.578	3	70.526	183.696	1.000E-13
WITHIN	44.535	116	.384		
TOTAL	256.113	119			

13.25

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 saat 29 hari sapi bunting dan tidak

	GROUP 1	GROUP 2
MEAN =	3.0970	.3758
STD. DEV. =	.6845	.5985
N =	67	33
DIFFERENCE =	2.7213	
STD. ERROR OF DIFFERENCE =	.1399	

T = 19.4579 (D.F. = 98) GROUP 1: bunting3  
 GROUP 2: tdkbun3

PROB. = 2.500E-14

13.26

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 saat 29 hari sapi tidak bunting dan embrio mati &lt;30 hari

	GROUP 1	GROUP 2
MEAN =	.3758	.2833
STD. DEV. =	.5985	.1467
N =	33	12
	DIFFERENCE =	.0924
STD. ERROR OF DIFFERENCE =		.1758

T = .5257 (D.F. = 43) GROUP 1: tdkbun3  
 GROUP 2: eed3

PROB. = .3009

13.27

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:AIP4 LABEL: P4 concentrations during AI,22 and 29day  
 NUMBER OF CASES: 67 NUMBER OF VARIABLES: 12

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 saat 29 hari pada sapi embrio mati &lt;30 dan &lt;60 hari

	GROUP 1	GROUP 2
MEAN =	.2833	3.0625
STD. DEV. =	.1467	.5236
N =	12	8
	DIFFERENCE =	-2.7792
STD. ERROR OF DIFFERENCE =		.1579

T = -17.5957 (D.F. = 18) GROUP 1: eed3  
 GROUP 2: eed6

PROB. = 4.550E-13

## Lampiran 14.

----- CROSSTAB / CHI-SQUARE TESTS -----  
 Jumlah sapi birahi setelah PGFim,PGFiu dan HCG

OBSERVED FREQUENCIES				
	1	2	3	TOTAL
1	9	7	7	23
2	1	3	3	7
TOTAL	10	10	10	30

CHI-SQUARE = 1.491, D.F. = 2, PROB. = .4746

## Lampiran 15.

----- CROSSTAB / CHI-SQUARE TESTS -----  
 Jumlah sapi ovulasi setelah PGFim,PGFiu & HCG

OBSERVED FREQUENCIES				
	1	2	3	TOTAL
1	8	9	8	25
2	2	1	2	5
TOTAL	10	10	10	30

CHI-SQUARE = .480, D.F. = 2, PROB. = .7866

## Lampiran 16.

----- CROSSTAB / CHI-SQUARE TESTS -----  
 Jumlah kebuntingan setelah PGFim,PGFiu & HCG

OBSERVED FREQUENCIES				
	1	2	3	TOTAL
1	5	4	4	13
2	5	6	6	17
TOTAL	10	10	10	30

CHI-SQUARE = .271, D.F. = 2, PROB. = .8731

## Lampiran 17.

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:PG-HCG LABEL: P4 sebelum dan saat birahi pd PGF & HCG  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 3

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda P4 sebelum PGF-im & PGF-iu

	GROUP 1	GROUP 2	
MEAN =	1.5900	1.1600	
STD. DEV. =	.9158	.8897	
N =	10	10	
	DIFFERENCE =	.4300	
STD. ERROR OF DIFFERENCE =		.4038	
T =	1.0650	(D.F. = 18)	GROUP 1: t-ePGim GROUP 2: t-ePGiu
PROB. =	.1505		

## 17.1

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:PG-HCG LABEL: P4 sebelum dan saat birahi pd PGF & HCG  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 3

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda P4 sebelum dan sesudah PGF-im

	GROUP 1	GROUP 2	
MEAN =	1.5900	.2778	
STD. DEV. =	.9158	.2167	
N =	10	9	
CASES =	1 TO 10	11 TO 19	
	DIFFERENCE =	1.3122	
STD. ERROR OF DIFFERENCE =		.3137	
T =	4.1830	(D.F. = 17)	VARIABLE TESTED: t-ePGim
PROB. =	3.120E-04		

17.2

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:PG-HCG LABEL: P4 sebelum dan saat birahi pd PGF & HCG  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 3

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda P4 sebelum dan sesaat birahi setelah PGF-iu

	GROUP 1	GROUP 2
MEAN =	1.1600	.2857
STD. DEV. =	.8897	.1069
N =	10	7
CASES =	1 TO 10	11 TO 20

	DIFFERENCE =	.8743
STD. ERROR OF DIFFERENCE =		.3412

T = 2.5620 (D.F. = 15) VARIABLE TESTED: t-ePGiu

PROB. = .0108

3 MISSING DATA CASES ENCOUNTERED.

17.3

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:PG-HCG LABEL: P4 sebelum dan saat birahi pd PGF & HCG  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 3

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda P4 sesaat birahi setelah PGFim & PGFiu

	GROUP 1	GROUP 2
MEAN =	.2778	.2857
STD. DEV. =	.2167	.1069
N =	9	7
	DIFFERENCE =	-.0079
STD. ERROR OF DIFFERENCE =		.0898

T = -.0884 (D.F. = 14) GROUP 1: t-ePGim  
 GROUP 2: t-ePGiu

PROB. = .4654

Lampiran 18

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:ESTRUS LABEL: Onset,durat.est.post PGim,PGiu,Hcg  
 NUMBER OF CASES: 9 NUMBER OF VARIABLES: 6

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda timbul birahi setelah PGF-im dan PGF-iu

	GROUP 1	GROUP 2
MEAN =	55.2222	47.4286
STD. DEV. =	26.3523	19.6542
N =	9	7
	DIFFERENCE =	7.7937
STD. ERROR OF DIFFERENCE =		11.9510

T = .6521 (D.F. = 14) GROUP 1: oPGF-im  
 GROUP 2: oPGF-iu

PROB. = .2624

Lampiran 19.

----- CROSSTAB / CHI-SQUARE TESTS -----

Jumlah sapi birahi setelah spon,prog & GnRH

OBSERVED FREQUENCIES

	1	2	3	4	5	TOTAL
1	2	5	8	8	8	31
2	8	5	2	2	2	19
TOTAL	10	10	10	10	10	50

CHI-SQUARE = 12.224, D.F. = 4, PROB. = .0158

## Lampiran 20.

----- CROSSTAB / CHI-SQUARE TESTS -----  
 Jumlah kasus ovulasi setelah Spon,Prog dan GnRH

		OBSERVED FREQUENCIES					
		1	2	3	4	5	TOTAL
1		2	7	7	9	8	33
2		8	3	3	1	2	17
TOTAL		10	10	10	10	10	50

CHI-SQUARE = 13.012, D.F. = 4, PROB. = .0112

## Lampiran 21.

----- CROSSTAB / CHI-SQUARE TESTS -----  
 Jumlah kebuntingan setelah Spon,Prog & GnRH

		OBSERVED FREQUENCIES					
		1	2	3	4	5	TOTAL
1		1	3	4	6	3	17
2		9	7	6	4	7	33
TOTAL		10	10	10	10	10	50

CHI-SQUARE = 5.882, D.F. = 4, PROB. = .2081

## Lampiran 22.

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:E-PRID LABEL: timbul birahi setelah spon-GnRH  
 NUMBER OF CASES: 8 NUMBER OF VARIABLES: 4

## ONE-WAY ANOVA

Beda timbul birahi setelah MPA, PRID, PRID+LH & GnRH

GROUP	MEAN	N
1	60.000	5
2	64.500	8
3	49.500	8
4	177.000	8
GRAND MEAN	90.621	29

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	83364.828	3	27788.276	59.744	1.535E-11
THIN	11628.000	25	465.120		
TOTAL	94992.828	28			

## 22.1

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:E-PRID LABEL: timbul birahi setelah spon-GnRH  
 NUMBER OF CASES: 8 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

	GROUP 1	GROUP 2
MEAN =	60.0000	64.5000
STD. DEV. =	12.0000	16.8946
N =	5	8
	DIFFERENCE =	-4.5000
STD. ERROR OF DIFFERENCE =		8.7207

T = -.5160 (D.F. = 11) GROUP 1: o-mpa  
 GROUP 2: o-prid

PROB. = .3080



22.2

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:E-PRID LABEL: timbul birahi setelah spon-GnRH  
 NUMBER OF CASES: 8 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda timbul birahi setelah MPA & PRID+LH

	GROUP 1	GROUP 2
MEAN =	60.0000	49.5000
STD. DEV. =	12.0000	12.3172
N =	5	8
	DIFFERENCE =	10.5000
STD. ERROR OF DIFFERENCE =		6.9567

T = 1.5093 (D.F. = 11) GROUP 1: o-mpa  
 GROUP 2: o-pr+LH

PROB. = .0797

22.3

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:E-PRID LABEL: timbul birahi setelah spon-GnRH  
 NUMBER OF CASES: 8 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda timbul birahi setelah MPA & GnRH

	GROUP 1	GROUP 2
MEAN =	60.0000	177.0000
STD. DEV. =	12.0000	33.7893
N =	5	8
	DIFFERENCE =	-117.0000
STD. ERROR OF DIFFERENCE =		15.9105

T = -7.3536 (D.F. = 11) GROUP 1: o-mpa  
 GROUP 2: o-GnRH

PROB. = 7.208E-06

22.4

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:E-PRID LABEL: timbul birahi setelah spon-GnRH  
NUMBER OF CASES: 8 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda timbul birahi setelah PRID & GnRH

		GROUP 1	GROUP 2	
MEAN =		64.5000	177.0000	
STD. DEV. =		16.8946	33.7893	
N =		8	8	
		DIFFERENCE = -112.5000		
STD. ERROR OF DIFFERENCE =		13.3564		
T =	-8.4229	(D.F. = 14)		GROUP 1: o-prid GROUP 2: o-GnRH
PROB. =	3.740E-07			

22.5

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:E-PRID LABEL: timbul birahi setelah spon-GnRH  
NUMBER OF CASES: 8 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda timbul birahi setelah Prid+LH & GnRH

		GROUP 1	GROUP 2	
MEAN =		49.5000	177.0000	
STD. DEV. =		12.3172	33.7893	
N =		8	8	
		DIFFERENCE = -127.5000		
STD. ERROR OF DIFFERENCE =		12.7153		
T =	-10.0273	(D.F. = 14)		GROUP 1: o-pr+LH GROUP 2: o-GnRH
PROB. =	4.516E-08			

## Lampiran 23.

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-brid-lh  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

## TWO-WAY ANOVA

P4 sebelum dan selama pengobatan derivat Progesteron

COL	MEAN	N
1	.460	20
2	.685	20
3	1.070	20
4	1.280	20

ROW	MEAN	N
1	.443	40
2	1.305	40

CELL MEANS		MEAN	N
ROW	COL		
1	1	.380	10
2	1	.540	10
1	2	.710	10
2	2	.660	10
1	3	.340	10
2	3	1.800	10
1	4	.340	10
2	4	2.220	10

GRAND MEAN .874 80

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
COLS	8.207	3	2.736	14.703	1.455E-07
ROWS	14.878	1	14.878	79.960	7.000E-14
INTERACTION	13.592	3	4.531	24.350	5.503E-11
ERROR	13.397	72	.186		
TOTAL	50.075	79			

23.1

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-brid-lh  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sebelum pengobatan Spon,MPA

	GROUP 1	GROUP 2	
MEAN =	.3800	.7100	
STD. DEV. =	.2098	.5763	
N =	10	10	
	DIFFERENCE =	-.3300	
STD. ERROR OF DIFFERENCE =		.1939	
T =	-1.7016	(D.F. = 18)	GROUP 1: spon GROUP 2: mpa
PROB. =	.0530		

23.2

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-brid-lh  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sebelum pengobatan Spon & PRID

	GROUP 1	GROUP 2	
MEAN =	.3800	.3400	
STD. DEV. =	.2098	.1897	
N =	10	10	
	DIFFERENCE =	.0400	
STD. ERROR OF DIFFERENCE =		.0894	
T =	.4472	(D.F. = 18)	GROUP 1: spon GROUP 2: prid
PROB. =	.3300		

23.3

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-prid-lh  
NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sebelum pengobatan Spon & Prid-Lh

	GROUP 1	GROUP 2	
MEAN =	.3800	.3400	
STD. DEV. =	.2098	.6132	
N =	10	10	
	DIFFERENCE =	.0400	
STD. ERROR OF DIFFERENCE =		.2049	
T =	.1952	(D.F. = 18)	GROUP 1: spon GROUP 2: prid-lh
PROB. =	.4237		

23.4

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-prid-lh  
NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 selama dalam pengobatan Spon & MPA

	GROUP 1	GROUP 2	
MEAN =	.5400	.6600	
STD. DEV. =	.2119	.6240	
N =	10	10	
	DIFFERENCE =	-.1200	
STD. ERROR OF DIFFERENCE =		.2084	
T =	-.5759	(D.F. = 18)	GROUP 1: spon GROUP 2: mpa
PROB. =	.2859		

23.5

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-prid-lh  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sedang dalam pengobatan Spon & Prid

	GROUP 1	GROUP 2	
MEAN =	.5400	1.8000	
STD. DEV. =	.2119	.2449	
N =	10	10	
	DIFFERENCE =	-1.2600	
STD. ERROR OF DIFFERENCE =		.1024	
T =	-12.3029	(D.F. = 18)	GROUP 1: spon GROUP 2: prid

PROB. = 1.688E-10

23.6

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-prid-lh  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 selama dalam pengobatan Spon & Prid-Lh

	GROUP 1	GROUP 2	
MEAN =	.5400	2.2200	
STD. DEV. =	.2119	.4541	
N =	10	10	
	DIFFERENCE =	-1.6800	
STD. ERROR OF DIFFERENCE =		.1585	
T =	-10.6017	(D.F. = 18)	GROUP 1: spon GROUP 2: prid-lh

PROB. = 1.804E-09

23.7

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-prid-lh  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 selama dalam pengobatan MPA & Prid

	GROUP 1	GROUP 2	
MEAN =	.6600	1.8000	
STD. DEV. =	.6240	.2449	
N =	10	10	
	DIFFERENCE =		-1.1400
STD. ERROR OF DIFFERENCE =			.2120
T =	-5.3780	(D.F. = 18)	GROUP 1: mpa GROUP 2: prid

PROB. = 2.064E-05

23.8

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-prid-lh  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 selama dalam pengobatan MPA & Prid-LH

	GROUP 1	GROUP 2	
MEAN =	.6600	2.2200	
STD. DEV. =	.6240	.4541	
N =	10	10	
	DIFFERENCE =		-1.5600
STD. ERROR OF DIFFERENCE =			.2440
T =	-6.3924	(D.F. = 18)	GROUP 1: mpa GROUP 2: prid-lh

PROB. = 2.548E-06

23.9

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-prid-lh  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 selama dalam pengobatan Prid & Prid-Lh

	GROUP 1	GROUP 2
MEAN =	1.8000	2.2200
STD. DEV. =	.2449	.4541
N =	10	10
	DIFFERENCE =	-.4200
STD. ERROR OF DIFFERENCE =		.1632
T =	-2.5741 (D.F. = 18)	GROUP 1: prid GROUP 2: prid-lh

PROB. = 9.555E-03

23.10

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-prid-lh  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sebelum dan sesudah pengobatan Spon

	GROUP 1	GROUP 2
MEAN =	.3800	.5400
STD. DEV. =	.2098	.2119
N =	10	10
CASES =	1 TO 10	11 TO 20
	DIFFERENCE =	-.1600
STD. ERROR OF DIFFERENCE =		.0943
T =	-1.6971 (D.F. = 18)	VARIABLE TESTED: spon

PROB. = .0535



23.11

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-brid-1h  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sebelum dan sesudah pengobatan MPA

	GROUP 1	GROUP 2
MEAN =	.7100	.6600
STD. DEV. =	.5763	.6240
N =	10	10
CASES =	1 TO 10	11 TO 20

	DIFFERENCE =	.0500
STD. ERROR OF DIFFERENCE =		.2686

T = .1862 (D.F. = 18) VARIABLE TESTED: mpa

PROB. = .4272

23.12

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-brid-1h  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sebelum dan sesudah Prid

	GROUP 1	GROUP 2
MEAN =	.3400	1.8000
STD. DEV. =	.1897	.2449
N =	10	10
CASES =	1 TO 10	11 TO 20

	DIFFERENCE =	-1.4600
STD. ERROR OF DIFFERENCE =		.0980

T = -14.9011 (D.F. = 18) VARIABLE TESTED: prid

PROB. = 7.210E-12

23.13

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:TREAT1 LABEL: P4 before and peak after spon-brid-lh  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 sebelum dan sesudah pengobatan Prid-LH

	GROUP 1	GROUP 2
MEAN =	.3400	2.2200
STD. DEV. =	.6132	.4541
N =	10	10
CASES =	1 TO 10	11 TO 20

	DIFFERENCE =	-1.8800
STD. ERROR OF DIFFERENCE =		.2413

T = -7.7914 (D.F. = 18) VARIABLE TESTED: prid-lh

PROB. = 1.782E-07

## Lampiran 24.

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: B:P4-LH1 LABEL: Kadar P4 & LH 5,10,21 & 42 hr P-L  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

## TWO-WAY ANOVA

P4 & LH pada 5, 10, 21 & 42 hari P-Lahir

COL	MEAN	N
1	.330	20
2	.890	20
3	1.760	20
4	1.780	20

ROW	MEAN	N
1	.323	40
2	2.058	40

## CELL MEANS

ROW	COL	MEAN	N
1	1	.030	10
2	1	.630	10
1	2	.140	10
2	2	1.640	10
1	3	.590	10
2	3	2.930	10
1	4	.530	10
2	4	3.030	10

GRAND MEAN 1.190 80

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
COLS	30.052	3	10.017	5.721	1.437E-03
ROWS	60.205	1	60.205	34.382	1.266E-07
INTERACTION	11.474	3	3.825	2.184	.0973
ERROR	126.077	72	1.751		
TOTAL	227.807	79			

## 24.1

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:P4-LH1 LABEL: Kadar P4 & LH 5,10,21 & 42 hr P-L  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda P4 & LH pd 5 hr P-L

	GROUP 1	GROUP 2
MEAN =	.0300	.6300
STD. DEV. =	.0949	.4315
N =	10	10
CASES =	1 TO 10	11 TO 20

DIFFERENCE =	-.6000
STD. ERROR OF DIFFERENCE =	.1397

T = -4.2942 (D.F. = 18) VARIABLE TESTED: P4LH-5hr

PROB. = 2.183E-04

## 24.2

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:P4-LH1 LABEL: Kadar P4 & LH 5,10,21 & 42 hr P-L  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda P4 & LH 10 hr P-L

	GROUP 1	GROUP 2
MEAN =	.1400	1.6400
STD. DEV. =	.1955	1.2501
N =	10	10
CASES =	1 TO 10	11 TO 20

DIFFERENCE =	-1.5000
STD. ERROR OF DIFFERENCE =	.4001

T = -3.7490 (D.F. = 18) VARIABLE TESTED: P4LH-10h

PROB. = 7.347E-04

24.3

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:P4-LH1 LABEL: Kadar P4 & LH 5,10,21 & 42 hr P-L  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda P4 &amp; LH pd 21 hr P-L

	GROUP 1	GROUP 2
MEAN =	.5900	2.9300
STD. DEV. =	.6420	2.1762
N =	10	10
CASES =	1 TO 10	11 TO 20

DIFFERENCE = -2.3400  
 STD. ERROR OF DIFFERENCE = .7175

T = -3.2614 (D.F. = 18) VARIABLE TESTED: P4LH-21h

PROB. = 2.167E-03

24.4

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:P4-LH1 LABEL: Kadar P4 & LH 5,10,21 & 42 hr P-L  
 NUMBER OF CASES: 20 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda P4 &amp; LH pd 42 hr P-L

	GROUP 1	GROUP 2
MEAN =	.5300	3.0300
STD. DEV. =	.9019	2.5002
N =	10	10
CASES =	1 TO 10	11 TO 20

DIFFERENCE = -2.5000  
 STD. ERROR OF DIFFERENCE = .8405

T = -2.9744 (D.F. = 18) VARIABLE TESTED: P4LH-42h

PROB. = 4.063E-03

24.5

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:LH-P4 LABEL: Hubungan LH & P4 5-42 hr P-L  
 NUMBER OF CASES: 10 NUMBER OF VARIABLES: 8

## ONE-WAY ANOVA

Beda Kadar LH 5, 10, 21, 42 hr P-L

GROUP	MEAN	N
1	.630	10
2	1.780	10
3	3.130	10
4	3.030	10
GRAND MEAN	2.143	40

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	41.819	3	13.940	4.647	7.590E-03
WITHIN	107.994	36	3.000		
TAL	149.813	39			

24.6

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:LH-P4 LABEL: Hubungan LH & P4 5-42 hr P-L  
 NUMBER OF CASES: 10 NUMBER OF VARIABLES: 8

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda LH Dalam 5 hr dengan 10 P-L

	GROUP 1	GROUP 2
MEAN =	.6300	1.7800
STD. DEV. =	.4315	1.2977
N =	10	10
	DIFFERENCE =	-1.1500
STD. ERROR OF DIFFERENCE =		.4325

T = -2.6592 (D.F. = 18) GROUP 1: 5hr-LH  
 GROUP 2: 10hr-LH

PROB. = 7.988E-03

24.7

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:LH-P4 LABEL: Hubungan LH & P4 5-42 hr P-L  
 NUMBER OF CASES: 10 NUMBER OF VARIABLES: 8

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda LH Pada 5 dgn 21 hr P-L

	GROUP 1	GROUP 2
MEAN =	.6300	3.1300
STD. DEV. =	.4315	1.9692
N =	10	10
	DIFFERENCE =	-2.5000
STD. ERROR OF DIFFERENCE =		.6375

T = -3.9215 (D.F. = 18) GROUP 1: 5hr-LH  
 GROUP 2: 21hr-LH

PROB. = 5.001E-04

24.8

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:LH-P4 LABEL: Hubungan LH & P4 5-42 hr P-L  
 NUMBER OF CASES: 10 NUMBER OF VARIABLES: 8

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda LH 5hr Dgn 42 hr P-L

	GROUP 1	GROUP 2
MEAN =	.6300	3.0300
STD. DEV. =	.4315	2.5002
N =	10	10
	DIFFERENCE =	-2.4000
STD. ERROR OF DIFFERENCE =		.8023

T = -2.9913 (D.F. = 18) GROUP 1: 5hr-LH  
 GROUP 2: 42hr-LH

PROB. = 3.916E-03

24.9

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:LH-P4 LABEL: Hubungan LH & P4 5-42 hr P-L  
 NUMBER OF CASES: 10 NUMBER OF VARIABLES: 8

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda LH 10 hr Dgn 21hr P-L

	GROUP 1	GROUP 2
MEAN =	1.7800	3.1300
STD. DEV. =	1.2977	1.9692
N =	10	10
	DIFFERENCE =	-1.3500
STD. ERROR OF DIFFERENCE =		.7458

T = -1.8102 (D.F. = 18) GROUP 1: 10hr-LH  
 GROUP 2: 21hr-LH

PROB. = .0435

24.10

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:LH-P4 LABEL: Hubungan LH & P4 5-42 hr P-L  
 NUMBER OF CASES: 10 NUMBER OF VARIABLES: 8

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda LH Pada 10 hr Dgn 42 hr P-L

	GROUP 1	GROUP 2
MEAN =	1.7800	3.0300
STD. DEV. =	1.2977	2.5002
N =	10	10
	DIFFERENCE =	-1.2500
STD. ERROR OF DIFFERENCE =		.8908

T = -1.4032 (D.F. = 18) GROUP 1: 10hr-LH  
 GROUP 2: 42hr-LH

PROB. = .0888



24.11

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:LH-P4 LABEL: Hubungan LH & P4 5-42 hr P-L  
 NUMBER OF CASES: 10 NUMBER OF VARIABLES: 8

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda LH Pada 21hr Dgn 42 hr P-L

		GROUP 1	GROUP 2
MEAN =		3.1300	3.0300
STD. DEV. =		1.9692	2.5002
N =		10	10
		DIFFERENCE =	.1000
STD. ERROR OF DIFFERENCE =			1.0064

T = .0994 (D.F. = 18) GROUP 1: 21hr-LH  
 GROUP 2: 42hr-LH

PROB. = .4610

24.12

## ----- CORRELATION MATRIX -----

HEADER DATA FOR: A:LH-P4 LABEL: Hubungan LH & P4 5-42 hr P-L  
 NUMBER OF CASES: 10 NUMBER OF VARIABLES: 8

Hubungan LH Pada setiap Periode Pasca-Lahir

	5hr-LH	10hr-LH	21hr-LH	42hr-LH
5hr-LH	1.00000			
10hr-LH	.54683	1.00000		
21hr-LH	.63427	-.09887	1.00000	
42hr-LH	.49338	.32759	.34575	1.00000

CRITICAL VALUE (1-tail, .05) = + or - .55240

CRITICAL VALUE (2-tail, .05) = +/- .62972

N = 10

24.13

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:LH-P4 LABEL: Hubungan LH & P4 5-42 hr P-L  
 NUMBER OF CASES: 10 NUMBER OF VARIABLES: 8

## ONE-WAY ANOVA

Beda P4 Pada 5,10, 21 &amp; 42 hr P-L

GROUP	MEAN	N
1	.030	10
2	.140	10
3	.590	10
4	.530	10
GRAND MEAN	.323	40

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	2.335	3	.778	2.446	.0797
WITHIN	11.455	36	.318		
TOTAL	13.790	39			

24.14

## ----- CORRELATION MATRIX -----

HEADER DATA FOR: A:LH-P4 LABEL: Hubungan LH & P4 5-42 hr P-L  
 NUMBER OF CASES: 10 NUMBER OF VARIABLES: 8

Hubungan Kadar LH Dgn P4 pda 5,10,21 &amp; 42 hr P-L

	5hr-P4	5hr-LH	10hr-P4	10hr-LH	21hr-P4	21hr-LH	42hr-P4
5hr-P4	1.00000						
5hr-LH	.30126	1.00000					
10hr-P4	.46728	.22125	1.00000				
10hr-LH	.62817	.54683	.78744	1.00000			
21hr-P4	.55280	.22982	.94196	.85468	1.00000		
21hr-LH	-.14809	.63427	-.30938	-.09887	-.33285	1.00000	
42hr-P4	.92330	.20726	.34532	.46480	.43236	-.12381	1.00000
42hr-LH	-.13069	.49338	-.07092	.32759	.00436	.34575	-.22168

CRITICAL VALUE (1-tail, .05) = + or - .55240  
 CRITICAL VALUE (2-tail, .05) = +/- .62972

N = 10

Lampiran 25.

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: A:GNRH-LH2 LABEL: 60'I,II,III LH setelah GnRH  
 NUMBER OF CASES: 15 NUMBER OF VARIABLES: 4

## ONE-WAY ANOVA

Beda rata rata LH setiap 60' setelah GnRH

GROUP	MEAN	N
1	1.207	15
2	2.953	15
3	9.273	15
4	6.020	15
GRAND MEAN	4.863	60

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	567.079	3	189.026	18.738	1.538E-08
WITHIN	564.920	56	10.088		
TOTAL	1131.999	59			

25.1

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:GNRH-LH2 LABEL: 60'I,II,III LH setelah GnRH  
 NUMBER OF CASES: 15 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda rata rata LH sebelum dan sesudah 60'I GnRH

	GROUP 1	GROUP 2
MEAN =	1.2067	2.9533
STD. DEV. =	.7440	1.6775
N =	15	15
DIFFERENCE =		-1.7467
STD. ERROR OF DIFFERENCE =		.4738

T = -3.6863 (D.F. = 28) GROUP 1: pretes  
 GROUP 2: 60'I

PROB. = 4.839E-04

25.2

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:GNRH-LH2 LABEL: 60'I,II,III LH setelah GnRH  
 NUMBER OF CASES: 15 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda rata rata LH sebelum dan sesudah 60'II GnRH

	GROUP 1	GROUP 2	
MEAN =	1.2067	9.2733	
STD. DEV. =	.7440	4.6711	
N =	15	15	
	DIFFERENCE =	-8.0667	
STD. ERROR OF DIFFERENCE =		1.2213	
T =	-6.6051	(D.F. = 28)	GROUP 1: pretes GROUP 2: 60,II

PROB. = 1.825E-07

25.3

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:GNRH-LH2 LABEL: 60'I,II,III LH setelah GnRH  
 NUMBER OF CASES: 15 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda rata rata LH sebelum dan sesudah 60'III GnRH

	GROUP 1	GROUP 2	
MEAN =	1.2067	6.0200	
STD. DEV. =	.7440	3.8942	
N =	15	15	
	DIFFERENCE =	-4.8133	
STD. ERROR OF DIFFERENCE =		1.0237	
T =	-4.7021	(D.F. = 28)	GROUP 1: pretes GROUP 2: 60,III

PROB. = 3.131E-05

25.4

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:GNRH-LH2 LABEL: 60'I,II,III LH setelah GnRH  
 NUMBER OF CASES: 15 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda rata rata LH setelah 60'I & 60'II GnRH

	GROUP 1	GROUP 2	
MEAN =	2.9533	9.2733	
STD. DEV. =	1.6775	4.6711	
N =	15	15	
	DIFFERENCE =	-6.3200	
STD. ERROR OF DIFFERENCE =		1.2815	
T =	-4.9318	(D.F. = 28)	GROUP 1: 60'I GROUP 2: 60,II

PROB. = 1.671E-05

25.5

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:GNRH-LH2 LABEL: 60'I,II,III LH setelah GnRH  
 NUMBER OF CASES: 15 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda rata rata LH setelah 60'I & 60'III GnRH

	GROUP 1	GROUP 2	
MEAN =	2.9533	6.0200	
STD. DEV. =	1.6775	3.8942	
N =	15	15	
	DIFFERENCE =	-3.0667	
STD. ERROR OF DIFFERENCE =		1.0948	
T =	-2.8011	(D.F. = 28)	GROUP 1: 60'I GROUP 2: 60,III

PROB. = 4.565E-03

25.6

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: A:GNRH-LH2 LABEL: 60'I,II,III LH setelah GnRH  
 NUMBER OF CASES: 15 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

Beda rata rata LH setelah 60'II & 60 III GnRH

	GROUP 1	GROUP 2	
MEAN =	9.2733	6.0200	
STD. DEV. =	4.6711	3.8942	
N =	15	15	
	DIFFERENCE =	3.2533	
STD. ERROR OF DIFFERENCE =		1.5702	
T =	2.0719	(D.F. = 28)	GROUP 1: 60,II GROUP 2: 60,III
PROB. =	.0238		

25.7

## ----- CORRELATION MATRIX -----

HEADER DATA FOR: A:GNRH-LH2 LABEL: 60'I,II,III LH setelah GnRH  
 NUMBER OF CASES: 15 NUMBER OF VARIABLES: 4

Hubungan antara kadar LH Dgn penyuntikan GnRH

	pretes	60'I	60,II	60,III
pretes	1.00000			
60'I	.04319	1.00000		
60,II	.44031	.16017	1.00000	
60,III	.43682	.02344	.35160	1.00000

CRITICAL VALUE (1-tail, .05) = + or - .44218  
 CRITICAL VALUE (2-tail, .05) = +/- .51235

N = 15

## Lampiran 26

## ----- ANALYSIS OF VARIANCE -----

HEADER DATA FOR: B:P4DIFF LABEL: P4 air susu,serum &plasma  
 NUMBER OF CASES: 42 NUMBER OF VARIABLES: 4

## ONE-WAY ANOVA

P4 dalam air susu penuh,skim, serum dan plasma

GROUP	MEAN	N
1	2.835	42
2	.945	42
3	1.105	42
4	1.148	42
GRAND MEAN	1.508	168

SOURCE	SUM OF SQUARES	D.F.	MEAN SQUARE	F RATIO	PROB.
BETWEEN	99.545	3	33.182	11.340	8.468E-07
WITHIN	479.858	164	2.926		
TOTAL	579.403	167			

## 26.1

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: B:P4DIFF LABEL: P4 air susu,serum &plasma  
 NUMBER OF CASES: 42 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 pada air susu penuh dan skim

	GROUP 1	GROUP 2
MEAN =	2.8352	.9452
STD. DEV. =	2.9219	.9107
N =	42	42
DIFFERENCE =	1.8900	
STD. ERROR OF DIFFERENCE =	.4723	

T = 4.0021 (D.F. = 82) GROUP 1: whole  
 GROUP 2: skim

PROB. = 6.851E-05

26.2

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: B:P4DIFF LABEL: P4 air susu,serum &plasma  
 NUMBER OF CASES: 42 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 dalam air susu penuh dan serum

	GROUP 1	GROUP 2
MEAN =	2.8352	1.1051
STD. DEV. =	2.9219	1.1015
N =	42	42
	DIFFERENCE =	1.7301
STD. ERROR OF DIFFERENCE =		.4818

T = 3.5907 (D.F. = 82) GROUP 1: whole  
 GROUP 2: serum

PROB. = 2.802E-04

26.3

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: B:P4DIFF LABEL: P4 air susu,serum &plasma  
 NUMBER OF CASES: 42 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 dalam air susu penuh dan plasma

	GROUP 1	GROUP 2
MEAN =	2.8352	1.1481
STD. DEV. =	2.9219	1.0600
N =	42	42
	DIFFERENCE =	1.6871
STD. ERROR OF DIFFERENCE =		.4796

T = 3.5177 (D.F. = 82) GROUP 1: whole  
 GROUP 2: plasma

PROB. = 3.563E-04



26.4

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: B:P4DIFF LABEL: P4 air susu,serum &plasma  
 NUMBER OF CASES: 42 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 dalam air susu skim dan serum

	GROUP 1	GROUP 2
MEAN =	.9452	1.1051
STD. DEV. =	.9107	1.1015
N =	42	42
	DIFFERENCE =	-.1599
STD. ERROR OF DIFFERENCE =		.2205

T = -.7249 (D.F. = 82) GROUP 1: skim  
 GROUP 2: serum

PROB. = .2353

26.5

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: B:P4DIFF LABEL: P4 air susu,serum &plasma  
 NUMBER OF CASES: 42 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 dalam air susu skim dan plasma

	GROUP 1	GROUP 2
MEAN =	.9452	1.1481
STD. DEV. =	.9107	1.0600
N =	42	42
	DIFFERENCE =	-.2029
STD. ERROR OF DIFFERENCE =		.2156

T = -.9407 (D.F. = 82) GROUP 1: skim  
 GROUP 2: plasma

PROB. = .1748

26.6

## ----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: B:P4DIFF LABEL: P4 air susu,serum &plasma  
 NUMBER OF CASES: 42 NUMBER OF VARIABLES: 4

DIFFERENCE BETWEEN TWO GROUP MEANS: POOLED ESTIMATE OF VARIANCE

P4 dalam serum dan plasma

	GROUP 1	GROUP 2	
MEAN =	1.1051	1.1481	
STD. DEV. =	1.1015	1.0600	
N =	42	42	
	DIFFERENCE =	-.0430	
STD. ERROR OF DIFFERENCE =		.2359	
T =	-.1823	(D.F. = 82)	GROUP 1: serum GROUP 2: plasma
PROB. =	.4279		

26.7

## ----- CORRELATION MATRIX -----

HEADER DATA FOR: B:P4DIFF LABEL: P4 air susu,serum &plasma  
 NUMBER OF CASES: 42 NUMBER OF VARIABLES: 4

Hubungan P4 dalam air susu penuh,skim, serum & plasma

	whole	skim	serum	plasma
whole	1.00000			
skim	.97755	1.00000		
serum	.89051	.89591	1.00000	
plasma	.96237	.95234	.92720	1.00000

CRITICAL VALUE (1-TAIL, .05) = + Or - .25751  
 CRITICAL VALUE (2-tail, .05) = +/- .30399

N = 42

## Lampiran 27

## Arti Singkatan

IB = ib = Inseminasi buatan	Bt = bt = bunting
tbt = tidak bunting	tb = tidak birahi
Br = b = birahi	Ov = ovulasi
Ov# Br = birahi tenang	Br # Ov = birahi tanpa ovulasi
# Res = tidak ada respon	KED = kematian embrio dini
ul = mikroliter	ug = mcg = mikrogram
ng = nanogram	ml = milliliter
nmol = nanomolar	l = liter
RIA = radioimmunoassay	cpm = count per minute
Bo = Bm = binding maximum	Tc = total count
NSB = non specific binding	cv = variasi koefisien
Qc-h = kualitas pemantau berkadar tinggi	
Qc-l = kualitas pemantau berkadar rendah	
PG-iu = PGF-iu = prostaglandin F <sub>2</sub> alfa ke dalam uterus	
PG-im = PGF-im = prostaglandin F <sub>2</sub> alfa ke dalam otot	
HCG-im = human chorionic gonadotropin ke dalam otot	
MPA = medroxy progesteron acetate	
LH = luteinizing hormon	
PRID = progesterone releasing vaginal device	
GnRH = gonadotropin releasing hormone	
PBSG = fosfat bufer salin gelatin	
<sup>125</sup> I = yodium radioaktif 125	
<sup>3</sup> H = tritium	

### Riwayat Hidup

Nama lengkap : Laba Mahaputra  
 Tempat/tanggal lahir : Gianyar, 24 November 1952.  
 Agama : Hindu Dharma  
 Pangkat/Jabatan/Golongan : Lektor Madya/ Penata TK. I/III-d  
 Kep. Lab. Ilmu Kebidanan Veteriner  
 Tempat Bekerja : Lab. Kebidanan Fakultas  
 Kedokteran Hewan UNAIR.  
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Pendidikan Dasar : Sekolah Dasar 1964  
 Sekolah Menengah Pertama 1967  
 Sekolah Menengah Atas 1970  
 Dokter Hewan, Lulus dari  
 Fakultas Kedokteran Hewan  
 Universitas Airlangga, 1978.

#### Pendidikan Pasca Sarjana :

1. Menjadi Asisten di Tahun 1978
2. Mengikuti Pendidikan Program S2 (Master of Science)  
 di Dept. of Vet. Clinical Studies  
 Universiti Pertanian Malaysia 1981-1983
3. Mengikuti Program Akta Mengajar V pada tahun program  
 1987/1988

4. Mengikuti Pendidikan Program S3 (Doktor) di Universitas Airlangga tahun 1985/1986 sampai sekarang.

Riwayat Pekerjaan:

- Asisten Ahli Madya., 1978-1979.
- Asisten Ahli Madya / Penata Muda 1979-1980.
- Asisten Ahli / Penata Muda Tingkat I 1980-1983.
- Lektor Muda / Penata 1983-1986.
- Lektor Madya / Penata tingkat I 1986 - Sekarang.

Keanggotaan Perkumpulan Profesi :

- Anggota PDHI (Persatuan Dokter Hewan Indonesia) sejak tahun 1979.

A. Karya Ilmiah :

1. Kongres Ilmiah (author)
  - Kecermatan Teknik Laparaskopi Untuk Penentuan Struktural Yang Ada Dalam Ovarium Sapi, Kongres Nasional Perhimpunan Dokter Hewan Indonesia, Bandung. 1984 .
2. Simposium / Seminar Ilmiah (author)
  - Kasus kasus strilitas sapi sapi betina yang akan dipotong dirumah potong hewan Kota Madya Surabaya Bogor 1980.

- Defatted milk progesterone radioimmunoassay as a tool to confirm oestrus, early pregnant diagnosis and early embryonic death in dairy cattle. Int. Symposium on The Use of Nuclear Techniques in Studies of Animal Production and Health in Different Environment IAEA/FAO, Vienna, 1986.
  - Penggunaan gabungan FSH, HCG dan Dynoprost untuk superovulasi pada sapi, Bogor 1987.
  - Mikrobiometri embrio dan aspek hormon progesteronnya pada kelinci, kambing dan sapi. Surabaya Oktober 1987
3. Publikasi Ilmiah (author)
- Gambaran kadar progesteron sebagai suatu alat untuk menentukan subfertilitas pada sapi, Media Kedokteran Hewan vol 1. 1987.
  - Klasifikasi kasus distokia dan pertolongannya pada empat perusahaan sapi perah di Surabaya, Media Kedokteran Hewan, vol 4 Desember 1988.
  - Pemantauan reseptor luteinizing hormon pada ovarium mencit dengan penyuntikkan <sup>131</sup>I-LH. Media Kedokteran hewan, 5.1989.
  - Pemisahan sel spermatozoa domba dengan sephadex column G-200. Media Kedokteran Hewan, 5. 1989.

- Teknik Diagnosis Kebuntingan pada ternak, edisi 1 1988 (editor).
  - Ilmu Kebidanan Veteriner lanjut, edisi 2, 1988 (editor)
  - Medroxyprogesteron asetat (Depo-provera) spon dan analognya sebagai penggertak fertilitas pada sapi. *Majalah Kedokteran Indonesia (MKI)*. 39. No. 7. 1989
  - Dilema Taman Ternak Fakultas Kedokteran Hewan Univ. Airlangga. Seminar sehari Taman Ternak FKH. Oktober. 1989.
  - Pengaruh penyuntikkan haloperidol, metoclopramide dan prolactin terhadap produksi air susu sapi perah Friesian. *Pertemuan Nasional Ikatan Ilmu Faal Seluruh Indonesia. Ujung Pandang. Desember 1989.*
4. Sebagai Penulis Pembantu (co-author)
- The milk progesterone assay for monitoring Fertility of dairy cows in small holder farms in Malaysia. 5th. Wld. Conf. Anim. Prod. 2; 237, 1983. Tokyo- Japan.

B. Penataran / latihan :

- Penataran staf pengajar dan peneliti dalam bidang penggunaan perpustakaan, Januari 1979.
- Latihan mengajar dengan TV bagi dosen PTN di Surabaya, Mei 1979.
- Penataran proses Belajar - Mengajar, Staf dosen Unair, April 1980.

- Penataran P4 tingkat Propinsi Daerah Tingkat I Jawa Timur, November 1980.

C. Kegiatan Pendidikan :

- Memberikan kuliah Inseminasi Buatan, Mahasiswa semester VII, Sejak tahun 1979.
- Memberikan kuliah Fisiologi Reproduksi, Mahasiswa semester IV, sejak tahun 1979.
- Memberikan kuliah Fertilitas, Mahasiswa semester VI, sejak tahun 1985. sampai sekarang.
- Memberikan kuliah Kebidanan, Mahasiswa semester VIII dan IX, sejak tahun 1984 sampai sekarang.
- Membimbing praktikum Kebidanan, Mahasiswa semester IX, sejak tahun 1984 sampai sekarang.
- Membimbing ko-asistensi Mahasiswa semester X sejak tahun 1984 sampai sekarang
- Panitia penataran Staf pengajar Unair dalam Penelitian dan penggunaan Perpustakaan. Surabaya, 1980.
- Duduk dalam panitia penguji S1 tahun 1983 sampai sekarang (FKH Unair)
- Anggota Team Penilai Seminar Fakultas Kedokteran Hewan UNAIR. tahun 1983 sampai sekarang.
- Pembimbing Skripsi Mahasiswa tingkat akhir, sejak tahun 1983 sampai sekarang.



- Pembimbing Skripsi dan penguji seminar Mahasiswa FMIPA, UNAIR.
- Konsultan S2 jur. Reproduksi Manusia FPS Unair.
- Penatar P4 Pola Pendukung 100 jam bagi mahasiswa baru tahun 1984/1985 , 1985/1986 , 1986/1987, 1988/1989
- Anggota Senat Fakultas Kedokteran Hewan UNAIR. tahun 1985 s/d sekarang.

d. Kegiatan Penelitian :

1. Karya Penelitian :

1.1. Peneliti Utama

- Pengaruh pengencer air siwalan kuning telur terhadap daya hidup air mani domba ekor gemuk, 1979/1980. Dana Pelita.
- Keadaan vagina smear sapi peranakan ongole waktu sedang bunting, 1980/1984. Dp3M.
- Penerapan Teknik Radioimmunoassay progesteron air susu untuk memonitoring dan menghindari infertilitas pada sapi peternakan kecil, 1984-1985. Dip. Unair.
- Mikrobiometri embrio dan aspek hormon progesteronnya pada sapi, kambing dan kelinci.
- Defatted milk progesterone assay as a tool to confirm oestrus, early pregnancy and early embryonid death. 1986. IAEA/FAO.

- Pengaruh pemberian PGF<sub>2</sub> alfa analog terhadap birahi, ovulasi dan konsepsi pada sapi anoestrus. UPJOHN, 1987.
- Pemantauan reseptor luteinizing hormon pada ovarium mencit dengan penyuntikkan <sup>131</sup>I-LH. 1989
- Pemisahan sel spermatozoa domba dengan sephadex G-200. 1989.
- Medroxyprogesteron asetat (Depo-provera) spon dan analognya sebagai penggertak fertilitas pada sapi. TMPD. 1989.

#### 1.2. Peneliti Pembantu

- Pengaruh Prostaglandin F2 alfa terhadap kecepatan gerak dan lama hidup sel mani domba ekor gemuk, 1980.
- Pengaruh pemberian Clomiphene citrate terhadap penambahan berat ovarium pada mencit, 1980.
- Pengaruh pemusingan / centrifuge terhadap umur mortalitas dan persentase hidup sel mani domba ekor gemuk dalam bahan pengencer air susu sapi, 1980.
- Pengaruh pemberian urea dalam ransum terhadap libido domba jantan jenis ekor gemuk, 1979/1980.
- Pengaruh pemberian preparat Pregnyl dan Gestyl terhadap kualitas dan kuantitas air mani pada domba ekor gemuk 1979/1980.

- Pengaruh pemberian Urea dalam ransum terhadap kualitas air mani domba ekor gemuk, 1979/1980.

2. Thesis :

- Postpartum ovarian Function in Dairy cattle. Thesis Master of Science Dept. of Veterinary Clinical Studies University Pertanian Malaysia 1983.

E. Kegiatan Ilmiah :

1. Nasional :

- Simposium Spermatologi, Surabaya 1978.
- Simposium Antibiotika, Surabaya 1979.
- Simposium Kimia Klinik, Surabaya 1980.
- Seminar Penyakit Reproduksi dan Unggas, Bogor 1980.
- Nachkontak Seminar UNAIR - ITS - DAAD, Surabaya 1987.
- Temu Ilmiah kedokteran Hewan, Surabaya 1988.

2. Internasional :

- 1st Research Coordination Meeting (RCM) on Application of Nuclear Techniques to Improve Reproductivity in Large Ruminant, IAEA/FAO, Vienna, Juni 1984.
- International Symposium on The Use Of Nuclear Techniques in Studies Of Animal Production and Health in Different Environments. Continued with 2nd Research Coordination Meeting, IAEA/FAO, Vienna . Maret 1986.

- Final Reseach Cordination Meeting (RCM) on application of Nuclear Techniques to Improve Reproductivity in Large Ruminant ,IAEA/FAO, Vienna, September 1988
- 6th Congress of Federation of Asian Veterinary Associations, Denpasar 1988.

F. Kegiatan Pengabdian Masyarakat :

- Anggota panitia pembinaan pelayanan kesehatan hewan Fakultas Kedokteran Hewan UNAIR, 1980.
- Anggota tim monitoring dan evaluasi penanggulangan wabah penyakit hewan menular Mulut & kuku , 1984.
- Anggota panitia pelaksana sub proyek kegiatan pengabdian pada masyarakat UNAIR, 1985.
- Wakil ketua panitia pelaksana pengukuhan sebagai guru besar an Prof. Dr. Soehartojo Hardjopranjoto M.Sc, Surabaya, 1986.
- Anggota tim penanggulangan gangguan rerproduksi sapi perah rakyat di Jawa Timur - FKH UNAIR, 1987  
Kecamatan Kedamaian kabupaten Gresik, 1988.
- Anggota tim pelaksana proyek pengabdian pada masyarakat diwilayah kerja koperasi susu sapi perah " Dana Mulya " Kecamatan Pacet Kabupaten Mojokerto, 1988.

- Anggota panitia penyelenggara Ujian Masuk PTN Lokal Surabaya, tahun 1980, 1984, 1985, 1986, 1988.
- Anggota panitia ujian masuk program Diploma UNAIR, tahun 1985, 1986, 1987.

G. Kegiatan Lain :

- Panitia pengarah penataran penggunaan perpustakaan bagi staf pengajar dan peneliti Unair .1980.
- Anggota pusat penelitian hewan percobaan Universitas Airlangga, tahun 1988.

H. Piagam Penghargaan :

- Donor darah 15 kali (PMI) tahun 1981.
- Dosen teladan tingkat Fakultas tahun 1986, SK rektor Universitas Airlangga no. 6099/PT.03./I/1986
- Panitia Lustrum VII Univ. Airlangga. 1989