

**SUMATRAN RHINO CONSERVATION CENTRE
DEPARTMENT OF WILDLIFE AND NATIONAL PARKS
SUNGAI DUSUN, SELANGOR
MALAYSIA**

MONTHLY REPORT

DECEMBER 2000

BY

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&

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INTRODUCTION

No breeding was recorded throughout the month although the mixing procedure was carried out. However, the pairing was done based on predicted estrus cycle since the blood result is delayed. Some of the rhinos' estrus cycles were missed due to the problem. Apart from that, a committee meeting was held in the center to discuss the management of the rhinos as well as the center itself.

As for the bleeding procedure, this program is still carried out twice weekly on all females for progesterone analysis. Other than that, the fecal collection was continued from all females. The latest blood progesterone profile is attached in the report.

RHINO MANAGEMENT

A) Daily Management

i) Night stall

Daily work

Adam and Umor managed the night stalls. However, Umor and Shariff arrived first at 7.00 a.m. and they cleaned the night stalls. Then, Shariff will inspect the electric fencing with Mohd Noor while Umor and Adam will continue the work in the night stall. If bleeding procedure was carried out, both rangers will help the veterinarian. When the food supply arrived, the browse and fruits were weighed and cleaned before giving to the rhinos. About 40 kg of browses and 7kg of fruits including papaya, banana and sweet potatoes were given daily. Usually, the browses consist of Macaranga sp., Artocarpus sp., Astonia sp. and Ficus sp. Apart from that, concentrate was given about 1.5kg every morning.

The rhinos

The rhinos were cleaned first before letting them out into the paddock for night stalls cleaning. After cleaning, the browses were put into the feed trough and the rhinos were let in for their morning meal. Clean water was put in the water trough and stress vet (multi-mineral powder) was mixed inside it. Daily observation was made and recorded in a daily workbook for each rhino.

ii) Ten acres enclosure

Daily Work

Mohd Noor and Shariff inspect the electric fencing every morning. Voltmeter was used to ensure that the voltage of the fencing is about 7.0 kV. The fencing was cleaned from any foreign objects such as spider web, dried leaves or creepers to avoid short circuit.

After inspection, the rangers will give the rhinos their concentrate before feeding them with the browse. They were confined in the quarter acre first before putting their browse in the feeding trough. The amount given was about 200kg for two rhinos daily. About 100kg were given in the morning and the other half in the afternoon.

B) Breeding Program

i) Rhino Pairing

The rhinos were mixed either in the quarter acre enclosure or inside the breeding paddock (No. 7). The females were mixed based on the predicted estrus cycle. This was done since the blood result cannot be obtained on time. The delayed was due to the RIA kit problem, which was not available for the blood analysis. No breeding was recorded and the latest blood result was received on 22/12/00. It showed that the females' cycles were missed.

Seputeh and Ara were paired on 3/12/00 around 9.30 a.m. but no breeding was recorded. Then, Rima was mixed with Ara from 5/12/00 to 11/12/00 but no positive responds were observed from the female. Trailing by male was observed but the female tends to move away when approached by the male. She also vocalized a lot.

After receiving the P4 result on 22/12/00, Rima and Seputeh were mixed with Ara on the 25/12/00 but no breeding was recorded. Based on this result, Mas Merah was also mixed with Shah but the male attacked her when she approached him. As for Minah and Panjang, their P4 level is still low and will be monitored closely.

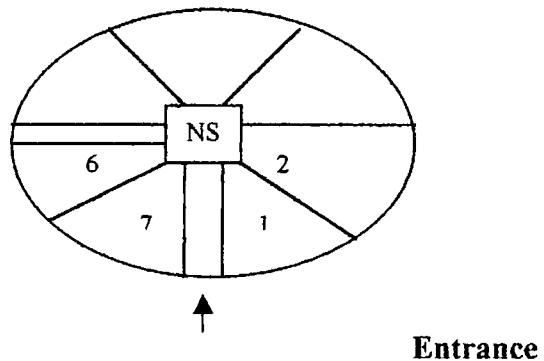


Figure 1: Night stall (NS) and paddocks

ii) Bleeding Program

a) Blood Collection

The bleeding was still carried out twice weekly. The blood procedure was summarized below.

b) Blood Results

i) Progesterone Hormone Profile

The latest blood result was received on 22/12/00 on all females and was attached below. The blood was delayed since the UPM cannot analyze them due to the shortage of the RIA kit.

iii) Fecal and Vaginal Cytology

The fecal collection is still continued for another three months based on the discussion held with Dr. Wahid (UPM). As for the cytology work, it was stopped after the last sampling on 14/12/00.

B) HEALTH STATUS

Generally, all rhinos are in the good condition. Some wound were observed on the females after the pairing procedure. This was then treated with iodine and Gusanex spray. As for Panjang, she was closely monitored after the pregnancy loss and her condition improved. Minah has recovered from the weight loss but need further monitoring. Both rhinos were force-fed about 20kg of browses each morning and afternoon, daily. Molasses block (Nutriblock®), 100gm/d orally were still given to them as a supplement.

Monthly blood screening was done on all rhinos and the blood was sent to VRI, Ipoh. The result showed that all rhinos are in a good condition. As for Panjang and Shah, the RBC value is slightly low and they were being given supplements and monitored. The result also revealed that Panjang did not having any infection due to her pregnancy loss on 2/11/00. The blood result was attached with this report.

Ultrasound was also conducted on 11/12/00 to inspect Panjang's ovarian activity. It revealed that two follicles were noted on the left ovary sizing 1.5 and 1.6 cm in diameter. Not much activity was observed on the right ovary. Apart from that, a mass was also observed outside the ovary.

C) FEEDING

The feed was checked daily to ensure their quantity and quality and it were satisfactory. The rhinos were given about 40 kg of browses, 3 kg of concentrates and 7 kg of fruits daily. Jackfruit or cempedak was ordered (2-4kg) on bleeding days especially for Seputeh.

D) OTHERS

a) *Patrolling of the Wildlife Reserve*

Routine patrolling was carried out to inspect the reserve and the result showed that no encroachment was observed. Due to the fasting month, the patrolling was conducted once only.

b) *Meeting with Dr. Wahid (UPM)*

A meeting was conducted with Dr. Wahid and Mr. Yap on 8/12/00 at UPM. The result of the meeting is attached.

c) SRCC Committee Meeting at SRCC

A committee meeting was held on 9/12/00 to discuss the management of SRCC. The detail discussion of the meeting is attached.

The Pairing Program of the Males and Females at SRCC, December 2000

Date	Remarks
3/12/00	Mix Seputeh & Ara. No response from both rhinos. Separated before fighting occurred.
5/12/00	Mix Rima & Ara but no positive response. Separated after 20 minutes.
6/12/00	Mix Rima & Ara in the morning between 8.00 to 9.30 a.m. No positive response from both rhinos. Mix again around 12.00 to 12.30 noon and from 2.30 to 3.00 p.m. but no breeding.
7/12/00	Mix Rima & Ara in the morning from 9.00 to 9.20 a.m. No interest from the male and the females vocalized a lot.
8/12/00	Mix Rima & Ara in the morning. No breeding was observed.
9/12/00	Mix Rima & Ara in the morning around 8.00 to 8.30 a.m. No breeding was observed.
11/12/00	Rima was mixed with Ara around 8.30 a.m. and again at 2.45 p.m. without any breeding observed.
25/12/00	Rima was paired with Ara around 8.30 am but no positive response observed. At 10.45 am, Seputeh was mixed with Ara without any breeding. She was then mixed again with Ara at 2.35 p.m. Apart from that, Mas Merah was paired with Shah and fighting occurred as the female approached the male.
27/12/00	Seputeh was paired with Ara inside the quarter acre but no breeding was recorded.
28/12/00	Seputeh was paired with Ara inside the quarter acre but no breeding was recorded.

Blood Collection from the Rhinos, December 2000

Date	Rhino ID	Area taken	Remarks
4/12/00	Minah Mas Merah Panjang Rima Seputeh	Tail Tail Tail Tail Tail	Samples were taken from all females for P4 analysis.
7/12/00	Mas Merah Minah Seputeh Rima Seputeh	Tail Tail Tail Tail Tail	Get blood samples from all females. The rhinos seem very cooperative.
11/12/00	Minah Mas Merah Panjang Rima Seputeh	Tail Tail Tail Tail Tail	Get samples via tail from all females.
14/12/00	Minah Mas Merah Panjang Rima Seputeh	Tail Tail Tail Tail Tail	Samples taken from all females for P4 analysis.
18/12/00	Mas Merah Minah Panjang Rima Seputeh	Tail Tail Tail Tail Tail	Samples were taken from all females for P4 analysis.
21/12/00	Minah Mas Merah Panjang Rima Seputeh	Tail Tail Tail Tail Tail	Get blood samples from all females. The rhinos seem very cooperative.
25/12/00	Minah Mas Merah Panjang Rima Seputeh	Tail Tail Tail Tail Tail	Get samples via tail from all females.
28/12/00	Minah Mas Merah Panjang Rima Seputeh	Tail Tail Tail Tail Tail	Samples were taken from all females for P4 analysis.

Meeting at UPM on the 8th December 2000

The recommendations made at the meeting were summarized as the followings;

1) Blood Collection and Results

The sample collection should be continued as a tool to determine estrus cycle and for the breeding management. However, UPM is facing the problem to analyze the blood on time since the RIA kit is not available. However, Dr. Wahid informed that the problem would be resolved within 2 weeks time. The P4 result will be sent either through email or by phone.

2) Fecal Sampling and Analysis

It is suggested that the fecal sampling and analysis should be continued for another three months. However, the antibody is needed and En. Mohd Khan will contact Dr. Franz to inquire his assistance.

3) Panjang's Condition

According to Dr. Wahid, Panjang could be pregnant based on the result obtained from VRI, Ipoh. His suggestion is that, probably the breeding took place earlier and not three weeks before the abortion. However, a second opinion on this matter should be considered. Ultrasonography has been scheduled on 11/12/00 for further confirmation. As for her estrus cycle, she could be back in estrus after 60 to 90 days post abortion based on Emi's experience in Cincinnati Zoo.

4) Vaginal Cytology

The sampling should be enough for data interpretation. Therefore, it should be stopped as soon as possible.

5) Status Report

Dr. Wahid will prepared a status report on all females based on their estrus cycle as well as the fecal analysis.

6) RIA or EIA method

It is agreed that RIA method will be used for blood analysis since it is more convenient compared to EIA method.

7) Progesterone Profile and Daily Introduction

It is agreed that both methods should be used for breeding management and these methods have been proven to achieve the result.



RIA DATA REDUCTION USING LOGIT-LOG TRANSFORMATION
(Computer Generated)

Date : 18-Dec-00 Assay #: P14/2000 ng/ml cv
 Hormone: Progesterone Expt #: Dr. Zainal / IRF QC-L= Nil UBo% = 71.4
 Label : 125-I TC (cpm)= 46102 QC-M= 3.65 2.8 NSB% = 2.0
 Sample: Sumatran Rhino B0 (cpm)= 32908 QC-H= Nil CBo% = 69.4
 Sg. Dusun NSB (cpm)= 920.5

Tube#	Sample	CPM	%B	Logit	LOG conc	Regression Output:	X on Y
1	TC	46684					
2	TC	45519					
3	NSB	958					
4	NSB	883					
5	B0	32772.0				Mean 0 = 32908.0	
6	B0	33044.0				cv % = 0.4	
7	B0	32772.0				SD = 136.0	
8	B0	33044.0					
9	0.1	29074.0	85.6	1.7786	-1.0000		
10	0.1	28460.0	83.7	1.6351	-1.0000	Constant	0.0121562
11	0.5	21234.0	61.7	0.4780	-0.3010	Std Err of Y Est	0.0453482
12	0.5	20884.0	60.7	0.4332	-0.3010	R Squared	0.9979582
13	2	13434.0	38.0	-0.4885	0.3010	No. of Observations	12
14	2	14777.0	42.1	-0.3184	0.3010	Degrees of Freedom	10
15	10	6181.0	16.0	-1.6593	1.0000		
16	10	6252.0	16.2	-1.6433	1.0000	X Coefficient(s)	-0.5923
17	20	4339.0	10.4	-2.1548	1.3010	Std Err of Coef.	0.008472
18	20	4362.0	10.5	-2.1473	1.3010		
19	40	2887.0	6.0	-2.7558	1.6021		
20	40	2966.0	6.2	-2.7139	1.6021		

Tube#	Sample	CPM	%B	Logit	LOG conc	ng/ml	mean	cv
	Sensitivity		99.2	4.7874	-2.8234	0.00		
	20%		20.0	-1.3863	0.8333	6.81		
	50%		50.0	0.0000	0.0122	1.03		
	80%		80.0	1.3863	-0.8089	0.16		
21	QC-L	Nil						
22		Nil						
23	QC-M	9968.0	27.5	-0.9697	0.5865	3.86	3.76	2.71
24		10231.0	28.3	-0.9300	0.5630	3.66		
25	QC-H	Nil						
26		Nil						
27	20/11/00 - M Merah	23944.0	70.0	0.8455	-0.4887	0.32		
28	23/11/00	24768.0	72.5	0.9678	-0.5610	0.27		
29	27/11/00	18310.0	52.8	0.1138	-0.0553	0.88		
30	30/11/00	17480.0	50.3	0.0128	0.0046	1.01		
31	04/12/00	29347.0	86.4	1.8474	-1.0820	0.08		
32	07/12/00	34625.0	102.4	ERR	ERR	ERR		
33	11/12/00	23642.0	69.0	0.8022	-0.4630	0.34		
34	15/12/00	14565.0	41.5	-0.3449	0.2164	1.65		
35	27/11/00 - Minah	23973.0	70.1	0.8497	-0.4911	0.32		
36	30/11/00	26729.0	78.4	1.2907	-0.7523	0.18		
37	04/12/00	23858.0	69.7	0.8331	-0.4813	0.33		
38	07/12/00	24272.0	71.0	0.8934	-0.5170	0.30		
39	11/12/00	30166.0	88.9	2.0776	-1.2184	0.06		
40	15/12/00	29033.0	85.4	1.7685	-1.0353	0.09		
41	20/11/00 - Panjang	29181.0	85.9	1.8051	-1.0570	0.09		
42	23/11/00	25058.0	73.3	1.0124	-0.5875	0.26		
43	27/11/00	22880.0	66.7	0.6960	-0.4001	0.40		
44	30/11/00	25421.0	74.5	1.0696	-0.6213	0.24		
45	04/12/00	19688.0	57.0	0.2831	-0.1555	0.70		
46	07/12/00	22620.0	65.9	0.6606	-0.3791	0.42		
47	11/12/00	21287.0	61.9	0.4848	-0.2750	0.53		
48	14/12/00	27636.0	81.2	1.4619	-0.8537	0.14		
49	20/11/00 - Rima	29739.0	87.6	1.9526	-1.1444	0.07		



RIA DATA REDUCTION USING LOGIT-LOG TRANSFORMATION

(Computer-Generated)

Date : 18-Dec-00 Assay #: E1/2000 U Bo = 81.16 pg/ml CV = 1.6%
 Hormone : Estradiol Expt #: Dr. Zainal / Khofifah QC-L = Nil UB0% = 62.9
 Label : 125-I TC (cpm) = 29522 QC-M = 157.65 NSB% = 2.2
 Sample : Sumatran Rhino - Panjang B0 (cpm) = 18558 QC-H = 1679.31 CBo% = 60.6
 Plasma - KK Cattle NSB (cpm) = 664 CB0 = 100.00
 NSB (cpm) = 664

Tube#	Sample	CPM	%B	Logit	LOG conc	pg/ml	mean	cv
1	TC	29925						
2	TC	29118						
3	NSB	723						
4	NSB	605						
5	B0	18848						
6	B0	18268						
7	B0	18848						
8	B0	18268						
9	20	16399	84.8	1.7181	1.3010			
10	20	16242	83.9	1.6539	1.3010			
11	50	12570	64.2	0.5821	1.6990			
12	50	11700	59.5	0.3833	1.6990			
13	150	9106	45.5	-0.1809	2.1761			
14	150	9108	45.5	-0.1805	2.1761			
15	500	4446	20.4	-1.3628	2.6990			
16	500	4559	21.0	-1.3256	2.6990			
17	1800	2216	8.4	-2.3940	3.2553			
18	1800	2241	8.5	-2.3766	3.2553			
19	3600	1634	5.2	-2.8977	3.5563			
20	3600	1564	4.8	-2.9765	3.5563			

Mean 0 = 18558.0

CV % = 1.6

SD = 290.0

Regression Output: X on Y

Constant 2.0595255

Std Err of Y Est 0.0735465

R Squared 0.9930538

No. of Observations 12

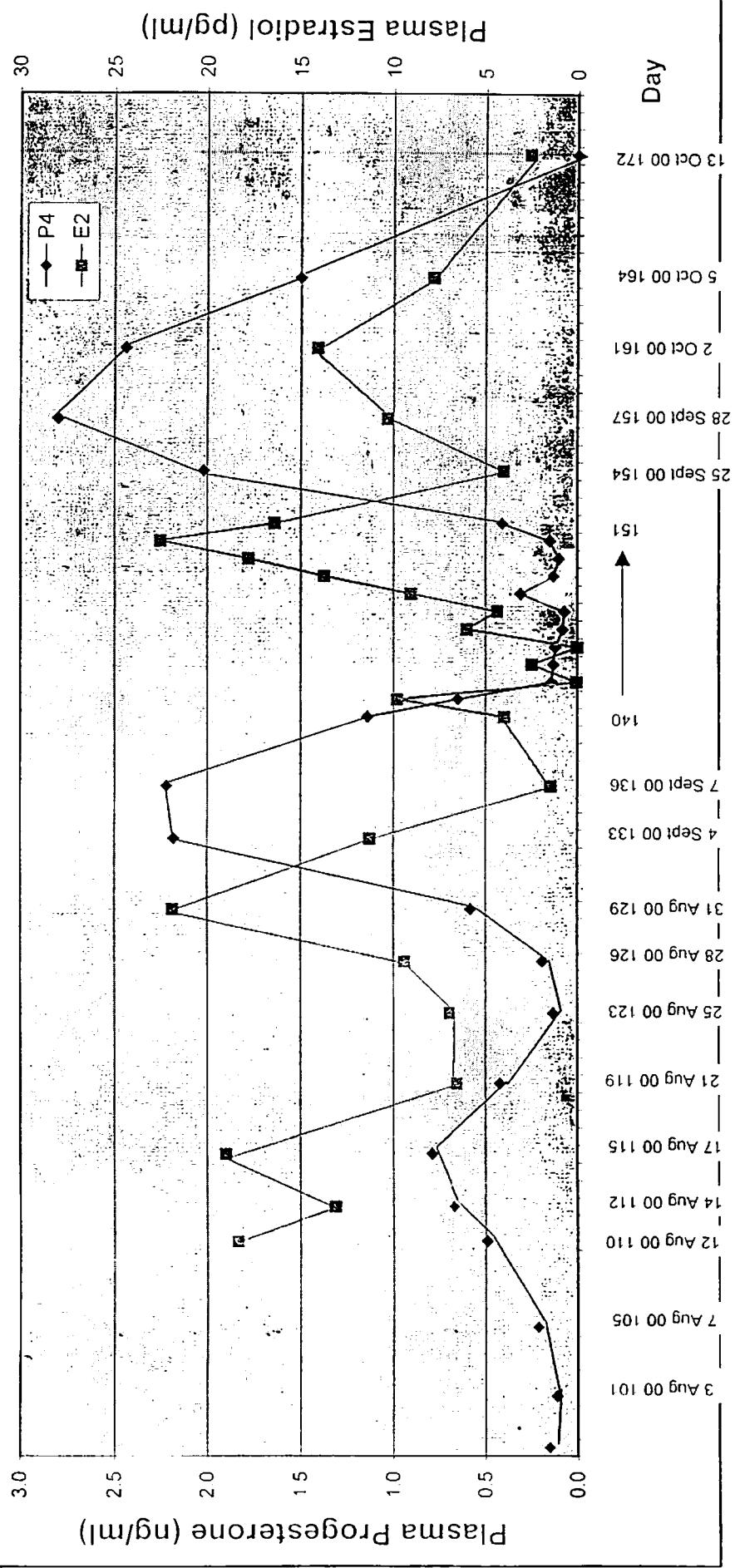
Degrees of Freedom 10

X Coefficient(s) -0.49791

Std Err of Coef 0.013169

Tube#	Sample	CPM	%B	Logit	LOG conc	pg/ml	mean	cv
	Sensitivity		96.9	3.4339	0.3498	2.24		
	20%		20.0	-1.3863	2.7498	562.05		
	50%		50.0	0.0000	2.0595	114.69		
	80%		80.0	1.3863	1.3693	23.40		
21	QC-L	Nil						
22		Nil						
23	QC-M	8668	43.1	-0.2766	2.1972	157.48	154.72	1.78
24		8810	43.9	-0.2454	2.1817	151.96		
25	QC-H	2303	8.8	-2.3344	3.2218	1666.54	1743.10	4.39
26		2192	8.2	-2.4110	3.2600	1819.66		
27	12/08/00 - Panjang	16103	83.2	1.5994	1.2632	18.33		
28	14/08/00	16792	86.9	1.8927	1.1172	13.10		
29	17/08/00	16024	82.8	1.5692	1.2782	18.98		
30	21/08/00	17805	92.4	2.4929	0.8183	6.58		
31	25/08/00	17741	92.0	2.4450	0.8421	6.95		
32	28/08/00	17341	89.9	2.1822	0.9730	9.40		
33	31/08/00	15684	80.9	1.4458	1.3396	21.86		
34	04/09/00	17054	88.3	2.0229	1.0523	11.28		
35	07/09/00	18820	97.8	3.8103	0.1623	1.45		
36	11/09/00	18277	94.9	2.9252	0.6030	4.01		
37	12/09/00	17281	89.5	2.1472	0.9904	9.78		
38	13/09/00	19204	99.9	6.9373	-1.3946	0.04		
39	14/09/00	18589	96.6	3.3435	0.3948	2.48		
40	15/09/00	19418	101.1	ERR	ERR	ERR		
41	16/09/00	17903	92.9	2.5703	0.7798	6.02		
42	17/09/00	18209	94.5	2.8519	0.6396	4.36		
43	18/09/00	17394	90.1	2.2140	0.9572	9.06		
44	19/09/00	16703	86.4	1.8512	1.1378	13.73		
45	20/09/00	16172	83.6	1.6262	1.2498	17.78		
46	21/09/00	15606	80.5	1.4188	1.3531	22.55		
47	22/09/00	16346	84.5	1.6961	1.2150	16.41		
48	25/09/00	18274	94.9	2.9219	0.6047	4.02		
49	28/09/00	17196	89.1	2.0992	1.0143	10.33		

SUMATRAN RHINO - PANJANG Plasma P4 and E2 Profile

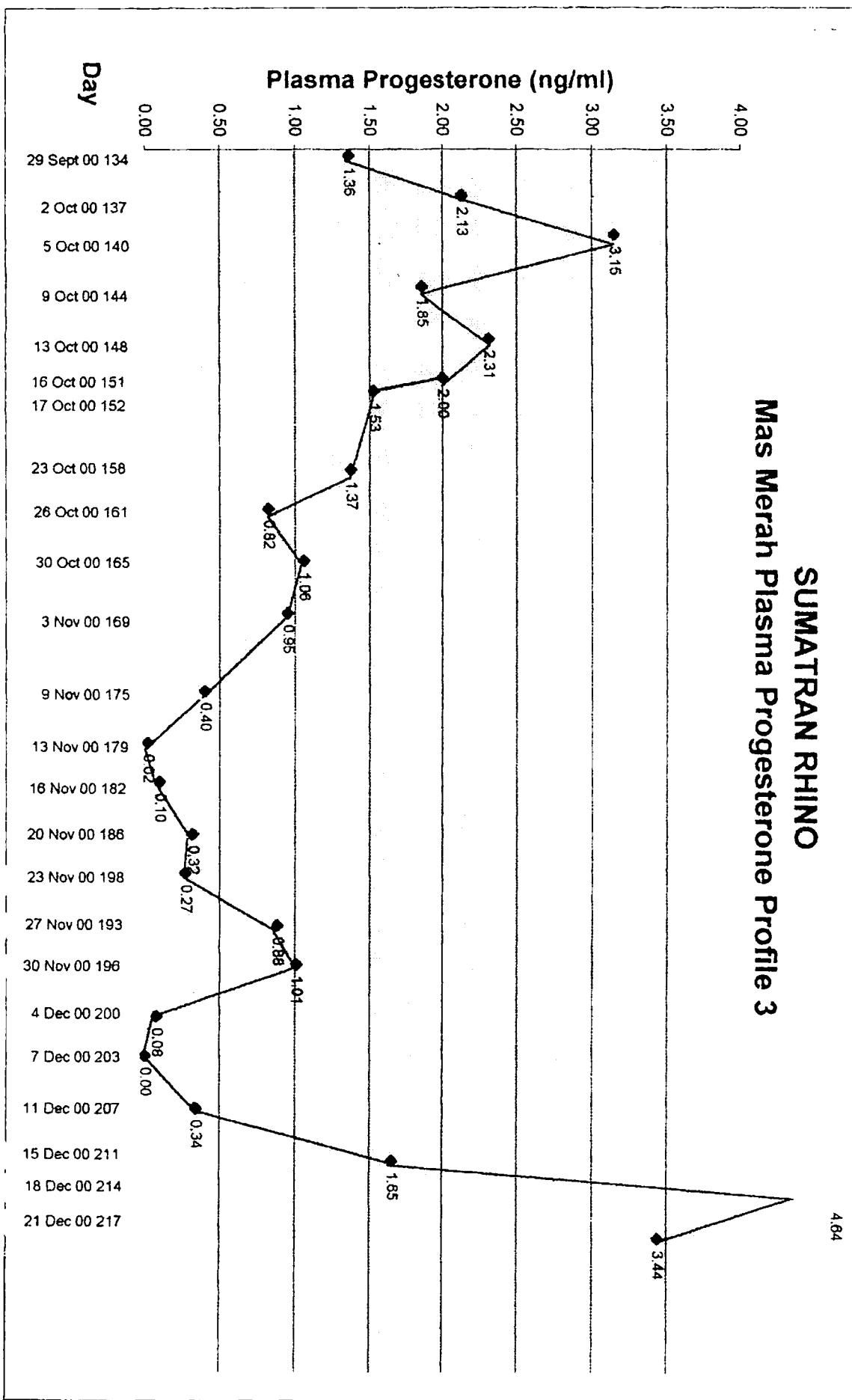


Sumatran Rhinoceros Plasma Progesterone Profile - 2000

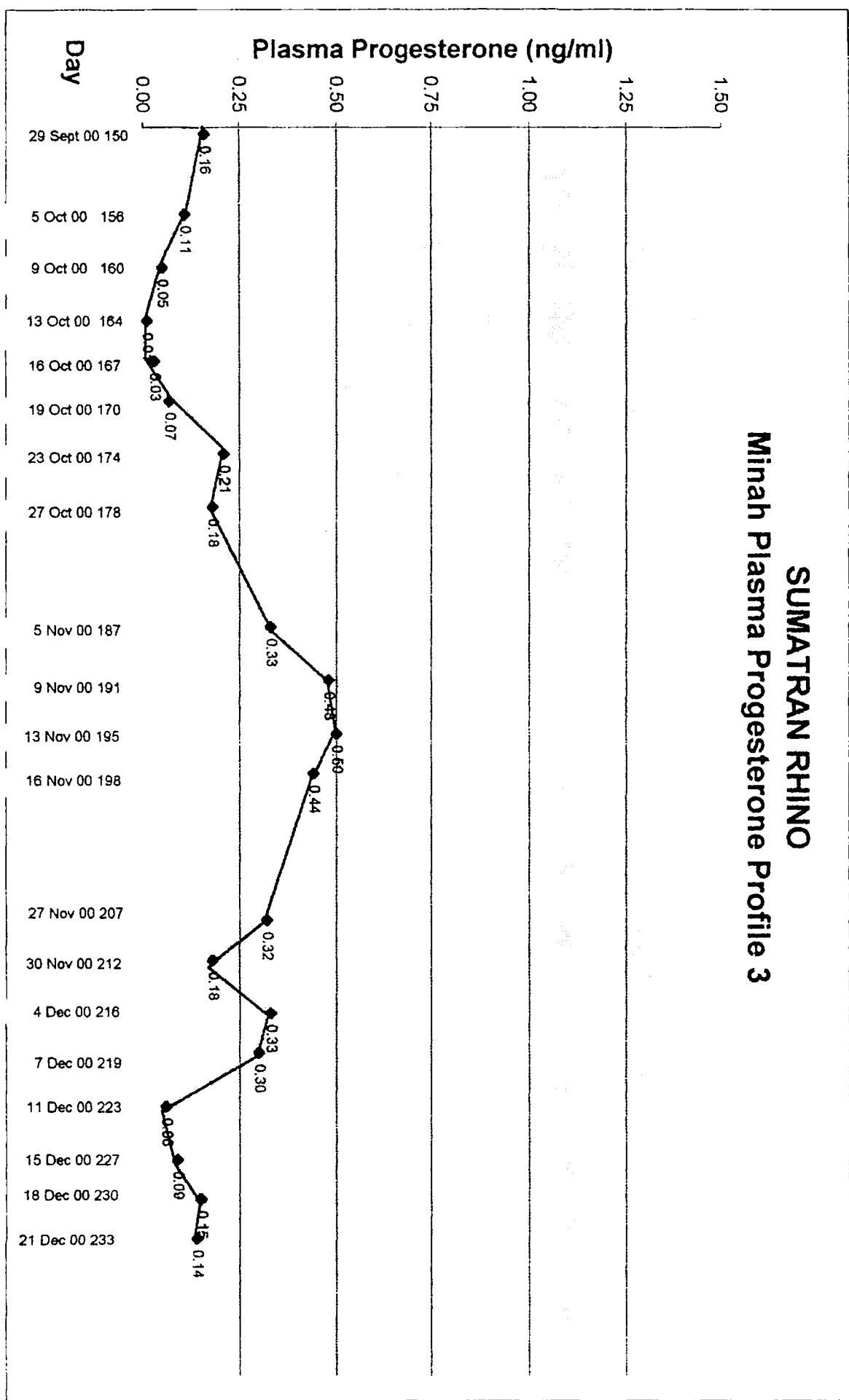
Mas Merah			Minah			Panjang			Rima			Seputih						
Date	Day	P4 (ng/ml)	Date	Day	P4 (ng/ml)	Date	Day	P4 (ng/ml)	E2 (pg/ml)	Date	Day	P4 (ng/ml)	Date	Day	P4 (ng/ml)			
1-Aug-00	75		1-Aug-00	91		1-Aug-00	99			1-Aug-00	75		1-Aug-00	99				
2-Aug-00	76		2-Aug-00	92		2-Aug-00	100			2-Aug-00	76		2-Aug-00	100				
3-Aug-00	77	0.46	3-Aug-00	93	0.08	3-Aug-00	101	0.11		3-Aug-00	77	0.08	3-Aug-00	101	1.23			
4-Aug-00	78		4-Aug-00	94		4-Aug-00	102			4-Aug-00	78		4-Aug-00	102				
5-Aug-00	79		5-Aug-00	95		5-Aug-00	103			5-Aug-00	79		5-Aug-00	103				
6-Aug-00	80		6-Aug-00	96		6-Aug-00	104			6-Aug-00	80		6-Aug-00	104				
7-Aug-00	81	0.16	7-Aug-00	97	0.25	7-Aug-00	105	0.21		7-Aug-00	81	0.29	7-Aug-00	105	0.80			
8-Aug-00	82		8-Aug-00	98		8-Aug-00	106			8-Aug-00	82		8-Aug-00	106				
9-Aug-00	83		9-Aug-00	99		9-Aug-00	107			9-Aug-00	83		9-Aug-00	107				
10-Aug-00	84		10-Aug-00	100	0.15	10-Aug-00	108			10-Aug-00	84		10-Aug-00	108				
11-Aug-00	85	0.28	11-Aug-00	101		11-Aug-00	109			11-Aug-00	85	0.75	11-Aug-00	109				
12-Aug-00	86		12-Aug-00	102		12-Aug-00	110	0.49	18.33	12-Aug-00	86		12-Aug-00	110				
13-Aug-00	87		13-Aug-00	103		13-Aug-00	111			13-Aug-00	87		13-Aug-00	111				
14-Aug-00	88	0.62	14-Aug-00	104		14-Aug-00	112	0.67	13.10	14-Aug-00	88	1.08	14-Aug-00	112	0.23			
15-Aug-00	89		15-Aug-00	105		15-Aug-00	113			15-Aug-00	89		15-Aug-00	113				
16-Aug-00	90		16-Aug-00	106		16-Aug-00	114			16-Aug-00	90		16-Aug-00	114				
17-Aug-00	91	0.77	17-Aug-00	107	0.17	17-Aug-00	115	0.79	18.98	17-Aug-00	91	1.56	17-Aug-00	115				
18-Aug-00	92		18-Aug-00	108		18-Aug-00	116			18-Aug-00	92		18-Aug-00	116				
19-Aug-00	93		19-Aug-00	109		19-Aug-00	117			19-Aug-00	93		19-Aug-00	117				
20-Aug-00	94		20-Aug-00	110		20-Aug-00	118			20-Aug-00	94		20-Aug-00	118				
21-Aug-00	95	1.53	21-Aug-00	111	0.19	21-Aug-00	119	0.42	6.58	21-Aug-00	95	0.11	21-Aug-00	119	0.09			
22-Aug-00	96		22-Aug-00	112		22-Aug-00	120			22-Aug-00	96		22-Aug-00	120				
23-Aug-00	97		23-Aug-00	113		23-Aug-00	121			23-Aug-00	97		23-Aug-00	121				
24-Aug-00	98		24-Aug-00	114		24-Aug-00	122			24-Aug-00	98		24-Aug-00	122				
25-Aug-00	99	1.06	25-Aug-00	115		25-Aug-00	123	0.13	6.95	25-Aug-00	99	0.20	25-Aug-00	123	0.32			
26-Aug-00	100		26-Aug-00	116	0.09	26-Aug-00	124			26-Aug-00	100		26-Aug-00	124				
27-Aug-00	101		27-Aug-00	117		27-Aug-00	125			27-Aug-00	101		27-Aug-00	125				
28-Aug-00	102	0.76	28-Aug-00	118	0.09	28-Aug-00	126	0.19	9.40	28-Aug-00	102	0.84	28-Aug-00	126	0.23			
29-Aug-00	103		29-Aug-00	119		29-Aug-00	127			29-Aug-00	103		29-Aug-00	127				
30-Aug-00	104		30-Aug-00	120		30-Aug-00	128			30-Aug-00	104		30-Aug-00	128				
31-Aug-00	105	0.32	0.43	31-Aug-00	121	0.13	0.17	31-Aug-00	129	0.58	0.65	21.86	31-Aug-00	105	0.33	0.43		
1-Sep-00	106		1-Sep-00	122		1-Sep-00	130			1-Sep-00	106		1-Sep-00	130				
2-Sep-00	107		2-Sep-00	123		2-Sep-00	131			2-Sep-00	107		2-Sep-00	131				
3-Sep-00	108		3-Sep-00	124		3-Sep-00	132			3-Sep-00	108		3-Sep-00	132				
4-Sep-00	109	0.53	0.87	4-Sep-00	125	0.30	0.49	4-Sep-00	133	2.18	2.89	11.28	4-Sep-00	109	1.26	1.45		
5-Sep-00	110		5-Sep-00	126		5-Sep-00	134			5-Sep-00	110		5-Sep-00	134				
6-Sep-00	111		6-Sep-00	127		6-Sep-00	135			6-Sep-00	111		6-Sep-00	135				
7-Sep-00	112	0.24		7-Sep-00	128	0.18		7-Sep-00	136	2.22		1.45	7-Sep-00	112	1.34			
8-Sep-00	113		8-Sep-00	129		8-Sep-00	137			8-Sep-00	113		8-Sep-00	137				
9-Sep-00	114		9-Sep-00	130		9-Sep-00	138			9-Sep-00	114		9-Sep-00	138	0.37			
10-Sep-00	115		10-Sep-00	131		10-Sep-00	139			10-Sep-00	115		10-Sep-00	139				
11-Sep-00	116	1.13		11-Sep-00	132	0.07		11-Sep-00	140	1.14		4.01	11-Sep-00	116	0.87			
12-Sep-00	117		12-Sep-00	133		12-Sep-00	141	0.65		9.78	12-Sep-00	117		12-Sep-00	141			
13-Sep-00	118		13-Sep-00	134	0.09	13-Sep-00	142	0.14		0.04	13-Sep-00	118	0.29	13-Sep-00	142			
14-Sep-00	119	2.11		14-Sep-00	135	0.48		14-Sep-00	143	0.13		2.48	14-Sep-00	119	0.19	14-Sep-00	143	1.44
15-Sep-00	120		15-Sep-00	136		15-Sep-00	144	0.12		0.00	15-Sep-00	120	0.03	15-Sep-00	144			
16-Sep-00	121		16-Sep-00	137	0.64	16-Sep-00	145	0.08		6.02	16-Sep-00	121	0.06	16-Sep-00	145			
17-Sep-00	122		17-Sep-00	138	0.82	17-Sep-00	148	0.07		4.36	17-Sep-00	122	0.11	17-Sep-00	146			
18-Sep-00	123	1.49		18-Sep-00	139	0.81		18-Sep-00	147	0.31		9.06	18-Sep-00	123	0.24	18-Sep-00	147	3.07
19-Sep-00	124		19-Sep-00	140	0.77	19-Sep-00	148	0.13		13.73	19-Sep-00	124	0.40	19-Sep-00	148			
20-Sep-00	125		20-Sep-00	141	1.10	20-Sep-00	149	0.10		17.78	20-Sep-00	125	0.65	20-Sep-00	149			
21-Sep-00	126	0.85		21-Sep-00	142	1.34		21-Sep-00	150	0.15		22.55	21-Sep-00	126	1.21	21-Sep-00	150	1.42
22-Sep-00	127		22-Sep-00	143		22-Sep-00	151	0.41		16.41	22-Sep-00	127		22-Sep-00	151			
23-Sep-00	128		23-Sep-00	144		23-Sep-00	152				23-Sep-00	128		23-Sep-00	152			
24-Sep-00	129		24-Sep-00	145		24-Sep-00	153				24-Sep-00	129		24-Sep-00	153			
25-Sep-00	130	1.03		25-Sep-00	146	1.13		25-Sep-00	154	2.02		4.02	25-Sep-00	130	1.83	25-Sep-00	154	0.13
26-Sep-00	131		26-Sep-00	147		26-Sep-00	155				26-Sep-00	131		26-Sep-00	155			
27-Sep-00	132	1.37		27-Sep-00	148		27-Sep-00	156				27-Sep-00	132		27-Sep-00	156		
28-Sep-00	133	1.56		28-Sep-00	149		28-Sep-00	157	2.80		10.33	28-Sep-00	133	2.42		28-Sep-00	157	0.41
29-Sep-00	134	1.36		29-Sep-00	150	0.16		29-Sep-00	158				29-Sep-00	134		29-Sep-00	158	
30-Sep-00	135		30-Sep-00	151		30-Sep-00	159				30-Sep-00	135		30-Sep-00	159			
1-Oct-00	136		1-Oct-00	152		1-Oct-00	160				1-Oct-00	136		1-Oct-00	160			
2-Oct-00	137	2.13		2-Oct-00	153		2-Oct-00	161	2.44		14.09	2-Oct-00	137	0.09		2-Oct-00	161	0.95
3-Oct-00	138		3-Oct-00	154		3-Oct-00	162				3-Oct-00	138		3-Oct-00	162			
4-Oct-00	139		4-Oct-00	155		4-Oct-00	163				4-Oct-00	139		4-Oct-00	163			
5-Oct-00	140	3.15		5-Oct-00	156	0.11		5-Oct-00	164	1.50			5-Oct-00	140	0.00	5-Oct-00	164	1.23
6-Oct-00	141		6-Oct-00	157		6-Oct-00	165			7.85	6-Oct-00	141		6-Oct-00	165			
7-Oct-00	142		7-Oct-00	158		7-Oct-00	166				7-Oct-00	142		7-Oct-00	166			
8-Oct-00	143		8-Oct-00	159		8-Oct-00	167				8-Oct-00	143		8-Oct-00	167			
9-Oct-00	144	1.85		9-Oct-00	160	0.05		9-Oct-00	168				9-Oct-00	144		9-Oct-00	168	0.15
10-Oct-00	145		10-Oct-00	161		10-Oct-00	169				10-Oct-00	145		10-Oct-00	169			
11-Oct-00	146		11-Oct-00	162		11-Oct-00	170				11-Oct-00	146		11-Oct-00	170			
12-Oct-00	147		12-Oct-00	163		12-Oct-00	171				12-Oct-00	147		12-Oct-00	171			
13-Oct-00	148	2.31		13-Oct-00	164	0.01		13-Oct-00	172	0.00		2.59	13-Oct-00	148		13-Oct-00	172	0.02
14-Oct-00	149		14-Oct-00	165		14-Oct-00	173				14-Oct-00	149		14-Oct-00	173			
15-Oct-00	150		15-Oct-00	166		15-Oct-00	174				15-Oct-00	150		15-Oct-00	174			
16-Oct-00	151	2.00		16-Oct-00	167	0.03		16-Oct-00	175				16-Oct-00	151		16-Oct-00	175	0.06
17-Oct-00	152	1.53		17-Oct-00	168			17-Oct-00	176				17-Oct-00	152		17-Oct-00	176	
18-Oct-00	153		18-Oct-00	169		18-Oct-00	177				18-Oct-00	153		18-Oct-00	177	0.05		
19-Oct-00	154		19-Oct-00	170	0.07		19-Oct-00	178				19-Oct-00	15					

Mas Merah			Minah			Panjang			Rima			Seputih			
Date	Day	P4 (ng/ml)	Date	Day	P4 (ng/ml)	Date	Day	P4 (ng/ml)	E2 (pg/ml)	Date	Day	P4 (ng/ml)	Date	Day	P4 (ng/ml)
1-Nov-00	167		1-Nov-00	183		1-Nov-00	191			1-Nov-00	167		1-Nov-00	191	
2-Nov-00	168		2-Nov-00	184		2-Nov-00	192	0.23		2-Nov-00	168		2-Nov-00	192	
3-Nov-00	169	1.06	3-Nov-00	185		3-Nov-00	193			3-Nov-00	169		3-Nov-00	193	
4-Nov-00	170		4-Nov-00	186		4-Nov-00	194			4-Nov-00	170		4-Nov-00	194	
5-Nov-00	171		5-Nov-00	187	0.33	5-Nov-00	195			5-Nov-00	171		5-Nov-00	195	
6-Nov-00	172		6-Nov-00	188		6-Nov-00	196	0.11		6-Nov-00	172		6-Nov-00	186	0.07
7-Nov-00	173		7-Nov-00	189		7-Nov-00	197			7-Nov-00	173		7-Nov-00	197	
8-Nov-00	174		8-Nov-00	190		8-Nov-00	198			8-Nov-00	174		8-Nov-00	198	
9-Nov-00	175	0.40	9-Nov-00	191	0.48	9-Nov-00	199	0.06		9-Nov-00	175	1.83	9-Nov-00	199	
10-Nov-00	176		10-Nov-00	192		10-Nov-00	200			10-Nov-00	176		10-Nov-00	200	
11-Nov-00	177		11-Nov-00	193		11-Nov-00	201			11-Nov-00	177		11-Nov-00	201	
12-Nov-00	178		12-Nov-00	194		12-Nov-00	202			12-Nov-00	178		12-Nov-00	202	
13-Nov-00	179	0.02	13-Nov-00	195	0.50	13-Nov-00	203	0.19		13-Nov-00	179		13-Nov-00	203	
14-Nov-00	180		14-Nov-00	196		14-Nov-00	204			14-Nov-00	180		14-Nov-00	204	
15-Nov-00	181		15-Nov-00	197		15-Nov-00	205			15-Nov-00	181		15-Nov-00	205	
16-Nov-00	182	0.10	16-Nov-00	198	0.44	16-Nov-00	206	0.11		16-Nov-00	182	0.58	16-Nov-00	206	
17-Nov-00	183		17-Nov-00	199		17-Nov-00	207			17-Nov-00	183		17-Nov-00	207	
18-Nov-00	184		18-Nov-00	200		18-Nov-00	208			18-Nov-00	184		18-Nov-00	208	
19-Nov-00	185		19-Nov-00	201		19-Nov-00	209			19-Nov-00	185		19-Nov-00	209	
20-Nov-00	186	0.32	20-Nov-00	202		20-Nov-00	210	0.09		20-Nov-00	186	0.07	20-Nov-00	210	2.14
21-Nov-00	187		21-Nov-00	203		21-Nov-00	211			21-Nov-00	187		21-Nov-00	211	
22-Nov-00	188		22-Nov-00	204		22-Nov-00	212			22-Nov-00	188		22-Nov-00	212	
23-Nov-00	189	0.27	23-Nov-00	205		23-Nov-00	213	0.26		23-Nov-00	189	0.24	23-Nov-00	213	2.47
24-Nov-00	190		24-Nov-00	206		24-Nov-00	214			24-Nov-00	190		24-Nov-00	214	
25-Nov-00	191		25-Nov-00	207		25-Nov-00	215			25-Nov-00	191		25-Nov-00	215	
26-Nov-00	192		26-Nov-00	208		26-Nov-00	216			26-Nov-00	192		26-Nov-00	216	
27-Nov-00	193	0.88	27-Nov-00	209	0.32	27-Nov-00	217	0.40		27-Nov-00	193	0.46	27-Nov-00	217	0.12
28-Nov-00	194		28-Nov-00	210		28-Nov-00	218			28-Nov-00	194		28-Nov-00	218	
29-Nov-00	195		29-Nov-00	211		29-Nov-00	219			29-Nov-00	195		29-Nov-00	219	
30-Nov-00	196	1.01	30-Nov-00	212	0.18	30-Nov-00	220	0.24		30-Nov-00	196	0.34	30-Nov-00	220	0.03
1-Dec-00	197		1-Dec-00	213		1-Dec-00	221			1-Dec-00	197		1-Dec-00	221	
2-Dec-00	198		2-Dec-00	214		2-Dec-00	222			2-Dec-00	198		2-Dec-00	222	
3-Dec-00	199		3-Dec-00	215		3-Dec-00	223			3-Dec-00	199		3-Dec-00	223	
4-Dec-00	200	0.08	4-Dec-00	216	0.33	4-Dec-00	224	0.70		4-Dec-00	200	0.75	4-Dec-00	224	0.06
5-Dec-00	201		5-Dec-00	217		5-Dec-00	225			5-Dec-00	201		5-Dec-00	225	
6-Dec-00	202		6-Dec-00	218		6-Dec-00	226			6-Dec-00	202		6-Dec-00	226	
7-Dec-00	203	0.00	7-Dec-00	219	0.30	7-Dec-00	227	0.42		7-Dec-00	203	0.63	7-Dec-00	227	0.18
8-Dec-00	204		8-Dec-00	220		8-Dec-00	228			8-Dec-00	204		8-Dec-00	228	
9-Dec-00	205		9-Dec-00	221		9-Dec-00	229			9-Dec-00	205		9-Dec-00	229	
10-Dec-00	206		10-Dec-00	222		10-Dec-00	230			10-Dec-00	206		10-Dec-00	230	
11-Dec-00	207	0.34	11-Dec-00	223	0.06	11-Dec-00	231	0.53		11-Dec-00	207	0.33	11-Dec-00	231	0.32
12-Dec-00	208		12-Dec-00	224		12-Dec-00	232			12-Dec-00	208		12-Dec-00	232	
13-Dec-00	209		13-Dec-00	225		13-Dec-00	233			13-Dec-00	209		13-Dec-00	233	
14-Dec-00	210		14-Dec-00	226		14-Dec-00	234	0.14		14-Dec-00	210	0.02	14-Dec-00	234	
15-Dec-00	211	1.65	15-Dec-00	227	0.09	15-Dec-00	235			15-Dec-00	211		15-Dec-00	235	
16-Dec-00	212		16-Dec-00	228		16-Dec-00	236			16-Dec-00	212		16-Dec-00	236	
17-Dec-00	213		17-Dec-00	229		17-Dec-00	237			17-Dec-00	213		17-Dec-00	237	
18-Dec-00	214	4.64	18-Dec-00	230	0.15	18-Dec-00	238	0.42		18-Dec-00	214	0.13	18-Dec-00	238	0.88
19-Dec-00	215		19-Dec-00	231		19-Dec-00	239			19-Dec-00	215		19-Dec-00	239	
20-Dec-00	216		20-Dec-00	232		20-Dec-00	240			20-Dec-00	216		20-Dec-00	240	
21-Dec-00	217	3.44	21-Dec-00	233	0.14	21-Dec-00	241	0.50		21-Dec-00	217	0.22	21-Dec-00	241	1.29
22-Dec-00	218		22-Dec-00	234		22-Dec-00	242			22-Dec-00	218		22-Dec-00	242	
23-Dec-00	219		23-Dec-00	235		23-Dec-00	243			23-Dec-00	219		23-Dec-00	243	
24-Dec-00	220		24-Dec-00	236		24-Dec-00	244			24-Dec-00	220		24-Dec-00	244	
25-Dec-00	221		25-Dec-00	237		25-Dec-00	245			25-Dec-00	221		25-Dec-00	245	
26-Dec-00	222		26-Dec-00	238		26-Dec-00	246			26-Dec-00	222		26-Dec-00	246	
27-Dec-00	223		27-Dec-00	239		27-Dec-00	247			27-Dec-00	223		27-Dec-00	247	
28-Dec-00	224		28-Dec-00	240		28-Dec-00	248			28-Dec-00	224		28-Dec-00	248	
29-Dec-00	225		29-Dec-00	241		29-Dec-00	249			29-Dec-00	225		29-Dec-00	249	
30-Dec-00	226		30-Dec-00	242		30-Dec-00	250			30-Dec-00	226		30-Dec-00	250	
31-Dec-00	227		31-Dec-00	243		31-Dec-00	251			31-Dec-00	227		31-Dec-00	251	

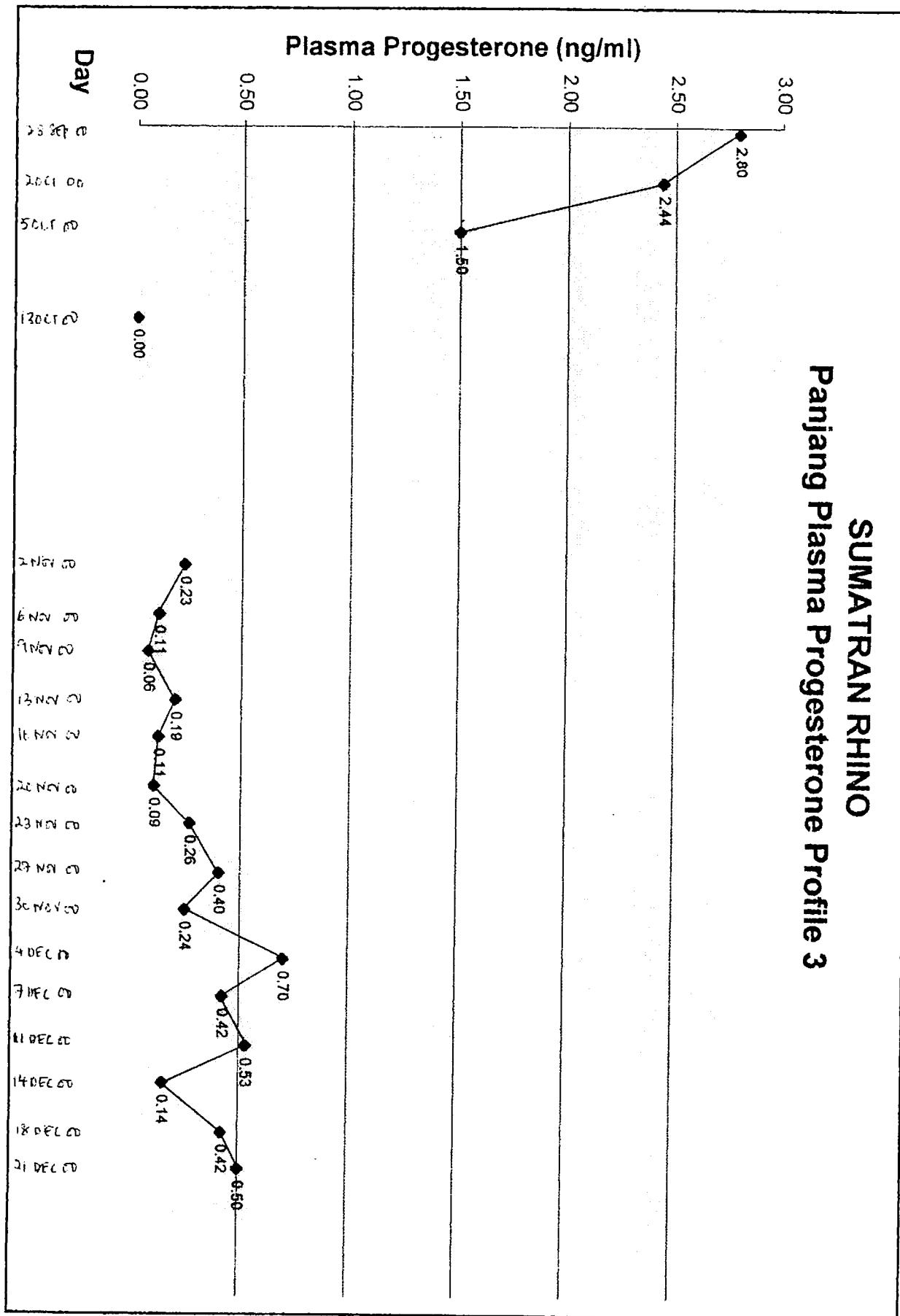
SUMATRAN RHINO
Mas Merah Plasma Progesterone Profile 3



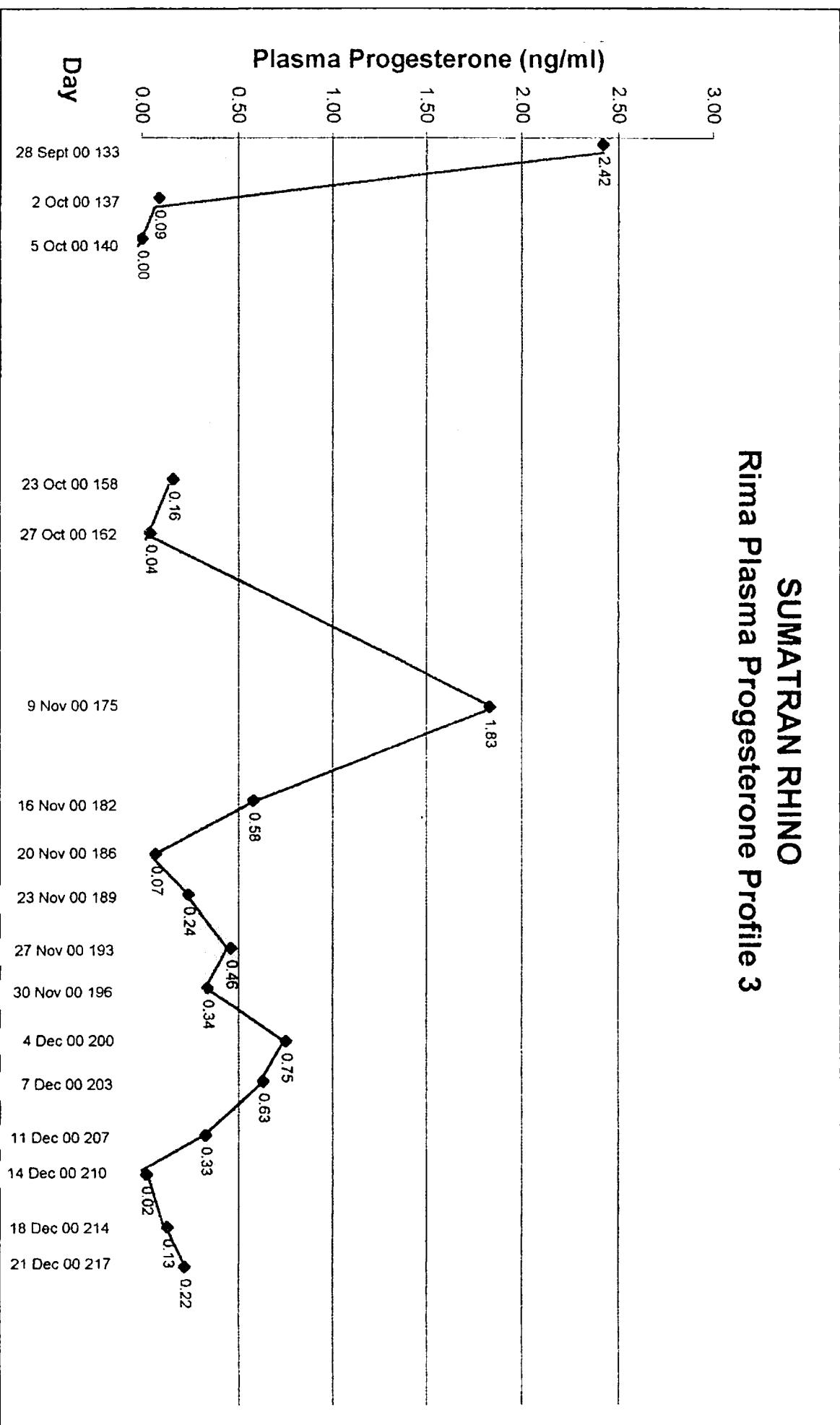
SUMATRAN RHINO
Minah Plasma Progesterone Profile 3



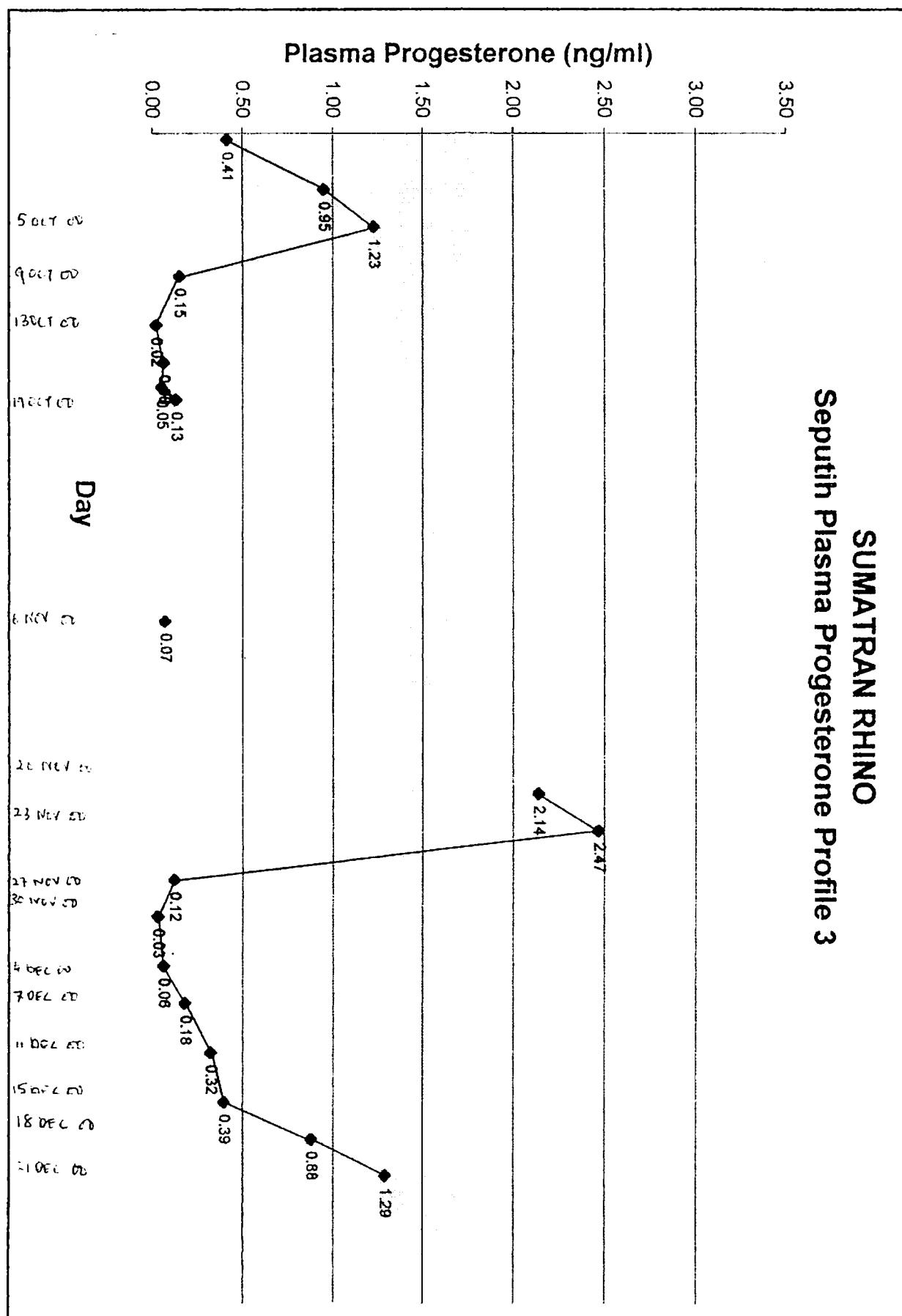
SUMATRAN RHINO
Panjang Plasma Progesterone Profile 3



SUMATRAN RHINO
Rima Plasma Progesterone Profile 3



SUMATRAN RHINO
Seputih Plasma Progesterone Profile 3



**INSTITUT PENYELIDIKAN HAIWAN
IPOH, PERAK DARUL RIDZUAN**

Laporan Keputusan Ujian

Daripada :

Bahagian Parasitologi / Hematologi,
Institut Penyelidikan Haiwan,
59, Jalan Sultan Azlan Shah,
31400 Ipoh, Perak Darul Ridzuan

Rujukan Penghantar : **009072**
Rujukan Makmal : **009072**
Tarikh : **19-12-00**

Kepada :

Dr. Zainal Zahari Bin Zainuddin
Pusat Pemuliharaan, Jabatan Perhilitan, Sg. Dusun
44010, Kuala Kubu Bharu, Selangor.

Tuanpunya : Jabatan PERHILITAN	Spesis : BADAk SUMBU
Alamat :	Spesimen : 6 contoh edta
	Ujian : CBC

Parameters	Unit	Mas Merah	Seputih	Minah	Panjang	Rima	Normal ranges
WBC	($\times 10^3 \mu$)	6.6	10.4	8.6	7.9	6.4	
RBC	($\times 10^6 \mu$)	4.07	5.59	5.10	3.54	4.14	
Hb	(g/dl)	11.2	16	14.2	10.5	11.6	
PCV	(%)	31	44.5	38.7	29.2	31.4	
MCV	(μ)	76.1	79.6	75.8	82.4	75.9	
MCH	(pg)	27.5	28.6	27.8	29.7	28	
MCHC	(g/dl)	36.1	36	36.7	36	36.9	
Neutrophils	(%)	69	64	74	61	81	
Lymphocytes	(%)	21	36	24	30	10	
Monocytes	(%)	2	0	2	4	4	
Eosinophils	(%)	8	0	0	5	5	
Basophils	(%)	0	0	0	0	0	
Blood Protozoa		negatif	negatif	negatif	negatif	negatif	

Catatan :

Chand

19/12/00

Dr. P. Chandrawathan
b/p Pengarah Penyelidik.
Institut Penyelidikan Haiwan.
Ipoh, Perak

Tarikh

**INSTITUT PENYELIDIKAN HAIWAN
IPOH, PERAK DARUL RIDZUAN**

Laporan Keputusan Ujian

Daripada :

Bahagian Parasitologi / Hematologi,
Institut Penyelidikan Haiwan,
59, Jalan Sultan Azlan Shah,
31400 Ipoh, Perak Darul Ridzuan

Rujukan Penghantar :
Rujukan Makmal : **009072**
Tarikh : 19-12-00

Kepada :

Dr. Zainal Zahari Bin Zainuddin
Pusat Pemuliharaan, Jabatan Perhilitan, Sg. Dusun
44010, Kuala Kubu Bharu, Selangor.

Tuanpunya : Jabatan PERHILITAN	Spesis : BADAk SUMBU
Alamat :	Spesimen : 6 contoh edta
	Ujian : CBC

Parameters	Unit	Shah					Normal ranges
WBC	($\times 10^3 \mu$)	5.7					
RBC	($\times 10^6 \mu$)	3.43					
Hb	(g/dl)	9.5					
PCV	(%)	25.7					
MCV	(μ^3)	75					
MCH	(p.g.)	27.7					
MCHC	(g/dl)	37					
Neutrophils	(%)	79					
Lymphocytes	(%)	14					
Monocytes	(%)	3					
Eosinophils	(%)	4					
Basophils	(%)	0					
Blood Protozoa		negatif					

Catatan :
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Chandru

19/12/00

Dr. P.Chandrawathani
b/p Pengarah Penyelidik,
Institut Penyelidikan Haiwan,
Ipoh, Perak

Tarikh

SRCC – Committee Meeting

Date: 9th December 2000
Time: 10.30 a.m.
Place: Meeting Room, SRCC, Sg. Dusun

Attendance:

- 1) En. Musa bin Nordin (Chairman)
- 2) En. Mohd Khan bin Momin Khan
- 3) Pn. Habsah bt. Muda
- 4) Hj. Sahir bin Othman
- 5) Dr. Zainal Zahari bin Zainuddin
- 6) Mr. John Stephen Romo
- 7) Dr. Aidi bin Mohamad (Secretary)

No.	Agenda / Topics	Action
1.0	<p>Chairman's Speech</p> <p>Mr. Chairman greeted everybody and apologized for being late due to health problems.</p>	
2.0	<p>Progress Report of SRCC</p> <p>The meeting was informed that generally the condition of the rhinos satisfactory. Monitoring of the females has been done for about 180 days based on the progesterone profile. It showed that all the females are cycling either some are regular or not.</p> <p>It was informed that five breeding has been achieved on three different females; Seputeh (2), Rima (2) and Panjang (1). From five mating, two of it were assisted.</p> <p>The breeding took place either inside the quarter acre or in the old paddock. The breeding resulted in one pregnancy but Panjang was aborted on the day 19-post breeding. Apart from that, pairing of other females were also conducted.</p>	
3.0	<p>Breeding Problems</p> <p>Three problems have been identified as follows;</p> <ul style="list-style-type: none"> a) Estrus cycle b) RIA kit c) Breeding yard <p>3.1 Estrus cycle</p> <p>Three of five females; Rima, Seputeh and Panjang have regular cycle (21 to 24 days). As for Mas Merah and Minah, their cycles are not consistent between 21 to 40 days. Therefore, pairing cannot be done regularly.</p>	

No.	Agenda / Topics	Action
	<p>3.2 RIA kit UPM is facing a problem to analyze the blood sample since the kit is out of stock. The supplier failed to supply the kit on time and this will delayed the blood result thus interfere the breeding management.</p> <p>The committee suggested that the supply is made for a year and this should be discussed with Dr. Wahid (UPM) to avoid the problem to be occurred.</p> <p>The committed agreed to inquire the help from the Medical Research Institute (IMR) or Malaya University (UM) if the problem persists. UPM could contact Dr. Stephen Ambu (IMR) or Prof. Ramli (UM) for assistance. This info should be passed to Dr. Wahid.</p> <p>It was informed that at least 2 boxes of RIA kit are needed monthly for the blood analysis and this will need extra costs. En. Mohd Khan informed that an allocation has been made to UPM and it should cover the costs. However, a discussion should be made with UPM to confirm this. Any financial problem could be informed to him.</p> <p>3.3 Breeding yard It is informed that the existing yard is uneven and there were some holes which, could be a problem during the breeding of the rhinos. The committee agreed that the yard should be fixed and a quotation of the repaired should be acquired soon.</p>	<p>Dr. Zainal Dr. Aidi</p> <p>Dr. Zainal Dr. Aidi</p> <p>Dr. Zainal Dr. Aidi</p> <p>Hj. Sahir Dr. Zainal Dr. Aidi</p>

No.	Agenda / Topics	Action
4.0	<p>Programs of the Center</p> <p>4.1 Breeding program The committee were informed that there were two proven methods for breeding; the used of the progesterone profile and also daily introduction.</p> <p>The committee agreed that the progesterone result was used for breeding management. As for the daily introduction, it will be only used if the result cannot be received on time.</p> <p>It was informed that Panjang is not cycling after the abortion. (VRI has confirmed that the samples sent were placenta cells). The committee suggested that same information on Emi should be gathered from Dr. Terri Roth (Cincinnati Zoo) to help the management plan.</p> <p>En Mohd Khan would like to know about the dates of breeding.</p> <p>4.2 Blood Analysis The committee was informed that the blood was analyzed once in two week and this will delayed the pairing of the rhinos. It was suggested that the analysis should be done once a week and this will be discuss with UPM</p> <p>It was also informed that the blood result is difficult to be received since the existing phone line is not working. The committee agreed that a fixed phone line should be install.</p> <p>4.3 Fecal Sampling and Analysis It was agreed that the procedure should be continued for another three months as discussed with UPM.</p> <p>En. Mohd Khan has contacted Dr. Franz (Austria) for the antibody used in the analysis.</p>	Dr. Zainal Dr. Aidi Dr. Zainal Dr. Aidi Dr. Aidi Dr. Zainal Dr. Aidi Hj. Sahir

No.	Agenda / Topics	Action
	<p>4.4 Vaginal Cytology The committee was informed that the sampling was stopped on all females except Mas Merah. It was agreed that the sampling of her should be stopped on 14/12/00.</p> <p>4.5 Monthly Report It was informed that the report being prepared by Dr. Zainal and it should be given to all members including En. Mohd Khan.</p> <p>It was also agreed that a work plan should be made bi-weekly for all activity in the center.</p> <p>4.6 Rhino Health Program The committee was informed that all rhinos are in a good condition. Blood screening was done once a month for CBC and blood parasite.</p> <p>Panjang and Minah were having weight loss problem and being treated with foce-feeding. Mas Merah was inappetance after pairing her with Shah on 17/10/00 but the problem has been resolved.</p>	Dr. Zainal Dr. Zainal Dr. Aidi
5.0	<p>Visitor</p> <p>5.1 The Procedure It was informed that the center has been received a lot of visitors since the promotion of it begins. However, a procedure regarding this matter should be made to assist the management of the center. A meeting with the LA will be carried out to discuss the matter further</p> <p>5.2 Communication Problem This problem will bring negative feedback from the public as the center has been promoted as one of the eco-tourism center. The committee agreed to overcome this problem soon.</p>	Hj. Sahir Hj. Sahir

No.	Agenda / Topics	Action
8.0	<p>The Closing</p> <p>The Chairman thanked everyone and remind that the meeting will be held once in two month. He also wished 'Selamat Hari Raya' to all and the meeting ended around 1.10 noon.</p>	