

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

MONTHLY REPORT

FEBRUARY 2001

BY

Dr. AIDI MOHAMAD

&

STEVE ROMO

INTRODUCTION

Two females were successfully bred this month; namely Rima and Seputeh. These two females showed a regular estrus cycle since last month and they were bred every 21 days apart. Another female, Mas Merah showed two regular cycles for the last two months and she should be monitored closely. The other two females: Minah and Panjang are still not cycling based on the low level of the plasma progesterone.

Three successfully breeding took place during the month involving two females and a male. Ara bred Seputeh and Rima successfully on predicted date of the females' estrus cycles. Seputeh was bred on two consecutive days on 16/02/01 and 17/2/01 based on the blood result received on 16/2/01. Rima was bred by Ara on 22/2/01 when the rhinos were paired together that day. Blood could not be taken on 20/2/01 due to some problems.

The bleeding procedure is still carried out twice weekly on all females for progesterone analysis. As for the bred females, they will be bled once a week. Other than that, the fecal sampling was still collected from all females. The weighing procedure was also conducted on 12/2/01 this month while all rhinos were dewormed on 19/2/01.

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 let out first before cleaning the night stalls. After cleaning, the browses were put in the feed trough and the rhinos were let in for their morning meal. The drinking water was changed daily and stress vet (multi-mineral powder) was mixed inside it. Daily observation was made and recorded in the workbook for each rhino. The rhinos were fed three times daily; 9.00 a.m., 12.00 noon and 3.00 p.m.

ii) Ten acres enclosure

Daily Work

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

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

All the pairing was done inside the quarter acre enclosure since the breeding yard is not ready yet. Seputeh and Rima were mixed based on their predicted estrus cycle. This was done by counting the days after breeding and the females should be in estrus on Day 21 if they are not conceived. Blood will be taken on Day 19 and will be sent to UPM for confirmation. If the result is negative, the female will be paired with the male on Day 21.

Seputeh was expected to be in estrus 16/2/01. On 14/2/01, blood was taken and sent to UPM for pregnancy confirmation. Unfortunately, the result revealed that she was not pregnant. She was mixed with Ara on the 16/2/01 around 4.00 p.m. The first thirty minutes, some aggressions were recorded but it was under control. Seputeh was observed provoking the male and head butting was occurred. Occasionally, the female will turn her back to the male assuming presenting herself and this will be repeated a few times. Therefore, this pair was left together but the aggression is closely monitored.

Later, Ara was observed trailing the female and he will smell the female's vulva. This was observed for about five minutes before the first mounting occurred. The event was recorded for about ninety minutes, which resulted in twelve mountings. The first erection was noted on the tenth mountings followed by the eleventh and the last one resulting intromission. She was bred for about 29 minutes with 35 thrusts.

The next day (17/2/01), around 11.00 a.m., the rhinos were paired again by the rangers. Head butting was observed at the first fifteen minutes but under controlled. The trailing event was recorded next and resulting in seven mountings. The intromission was noted during the last mounting and she was bred for 35 minutes with 30 thrusts.

As for Rima, she was expected to be in estrus on 22/2/01. She should be bled on 20/2/01 but due to some problems, it could not be done. However, Dr. Zainal and the rangers paired her with Ara on 22/2/01 morning around 8.30 a.m. inside the quarter acre and she was bred for about 55 minutes. Around 2.30 p.m., Dr. Zainal try to mix her with Shah but she was observed very freaky to the male and vocalized a lot. This was done for about fifteen minutes. Later, she was paired with Ara again around 2.40 p.m. but both rhinos were observed wallowing together. They were separated after 20 minutes.

ii) Bleeding Program

a) Blood Collection

The bleeding was still carried out twice weekly. As for the bred females, the blood was collected once a week. The blood procedure was summarized below.

b) Plasma Progesterone Profile

The latest blood result was received on 24/2/01 for all females. The result confirmed that the breeding, which took place throughout the month occurred when the progesterone level is low for the two females, Rima and Seputeh. It also confirmed that both females had 21 days estrus cycle.

Based on the graph, it was noted that Mas Merah is also cycling. She had two regular cycles for the last two months (Jan to Feb) but these cycles are missed since her cycle cannot be predicted before. This situation is worsening by the irregular analysis of the blood which made monitoring is difficult. However, she should be closely monitored in the future. If possible, daily introduction should be carried out to overcome the problem.

As for Minah and Panjang, both females still had a low level of progesterone throughout the month. However, Panjang's level starts increasing and she should be monitored closely. Daily introduction should be started when the breeding yard is available.

iii) Fecal Sampling

The fecal collection is still continued for all females. They were pooled and stored in - 20°C before sending them to UPM.

B) HEALTH STATUS

Generally, all rhinos are in the good condition. The weighing procedure has been conducted 12/02/01 and the result is attached below. Minah is still had a 'yoyo' syndrome of weight and needed further monitoring. As for Panjang, her weight is maintained as the previous month. As for Minah, she will be force-feeding if necessary. Molasses block (Nutriblock®), 100gm/d orally were still given to both females as a supplement.

On 19/02/01, all rhinos were given oral wormer. They were dewormed with Telmin® (40g Mebendazole).

C) FEEDING

No changes were made for the feeding program. The browses and produces were supplied by the contractor, which deliver them around 9.30 a.m. daily. The feed was checked to ensure their quantity and quality upon receiving them. They were cleaned and weighed before giving to the rhinos. 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

No encroachment was reported by the rangers when they do the patrolling this month.

b) Breeding yard and natural enclosure

The repairing works is already completed but the condition is still not suitable to be used. The yard should be left for a month to let the ground to be settled.

c) Visitors

A film crew from KL did visit SRCC on 11/2/01 to do a documentary about the centre. They are here for two days.

Table 1: Blood Collection from the Rhinos, February 2001

Date	Rhino ID	Area taken	Remarks
01/02/01	Mas Merah Panjang Rima	Tail Tail Tail	Samples were taken from all females for P4 analysis.
02/02/01	Minah	Tail	
05/02/01	Mas Merah Minah Seputeh Seputeh	Tail Tail Tail Tail	Get blood samples from all females. The rhinos seem very cooperative.
08/02/01	Panjang Minah Mas Merah	Tail Tail Tail	Get samples via tail from all three females.
10/02/01	Rima	Tail	
11/02/01	Mas Merah	Tail	
12/02/01	Minah Rima Seputeh Panjang	Tail Tail Tail Tail	Samples were taken from three females for P4 analysis.
13/02/01	Mas Merah	Tail	
14/02/01	Seputeh	Tail	Blood for pregnancy confirmation
15/02/01	Minah Mas Merah Panjang	Tail Tail Tail	Get samples via tail from all females.
19/02/01	Minah Mas Merah Panjang Rima Shah	Tail Tail Tail Tail Tail	Dr. Zainal took the samples from the four females and also Shah.
22/02/01	Minah Mas Merah Panjang Rima Seputeh	Tail Tail Tail Tail Tail	Get samples via tail from all females.
26/02/01	Minah Mas Merah Panjang Rima Seputeh	Tail Tail Tail Tail Tail	Samples were taken from all females for P4 analysis.

Table 2: The Pairing Program of the Males and Females at SRCC, February 2001

Date	Remarks
01/02/01	Mix Rima & Ara. She was bred again for about 32 minutes.
02/02/01	Mix Rima & Ara around 9.00 a.m. No interest.
16/02/01	Mix Seputeh & Ara in the afternoon around 4.00 p.m. Head butting was observed for the first thirty minutes but under controlled. Twelfth mountings were recorded throughout the procedure. The last one resulting intromission, which last about 29 minutes.
17/02/01	The rangers paired Seputeh & Ara again around 11.00 a.m. Aggression was observed at initial stage but Seputeh turned away and Ara started to follow her. Seven mountings were recorded and the last resulting intromission. She was bred for about thirty five minutes. Some aggression was recorded after the breeding but the rhinos were separated before fighting could occur.
22/01/01	Dr. Zainal and the rangers mixed Rima and Ara around 8.30 a.m. and she was bred for about 55 minutes. Around 2.30 p.m., Dr. Zainal tried to mix Rima with Shah but the female was freaky to the male and vocalize a lot. This was done for about 20 minutes. Later, she was mixed again with Ara but both rhinos showed no interest.

Table 3: Rhino Weight, January 2001

Rhino ID	Weight (kg) Feb 2001	Weight (kg) Jan 2001
Mas Merah	629	648
Rima	591	602
Minah	557	575
Seputeh	794	782
Panjang	566	566
Shah	576	566
Ara	*	645

* Inside the 10 acres

SRCC BREEDING PROGRAM, 2001

JANUARY

MON	TUE	WED	THU	FRI	SAT	SUN
1	2	3	4	5	6	7
8	9	10 Ara bred Rima (21 minutes)	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26 Ara bred Seputeh (30 minutes)	27	28
29 D19 Bleed Rima	30	31 D21 Ara bred Rima (20 minutes)				

FEBRUARY

MON	TUE	WED	THU	FRI	SAT	SUN
			1 Ara bred Rima (32 minutes)	2	3	4
5	6	7	8	9	10	11
12	13	14 D19 Bleed Puteh	15	16 D21 Ara bred Puteh (29 minutes)	17 Ara bred Puteh (35 minutes)	18
19	20 D19 Bleed Rima	21	22 D21 Ara bred Rima (55 minutes)	23	24	25
26	27	28				

MARCH

MON	TUE	WED	THU	FRI	SAT	SUN
			1	2	3	4
5	6	7	8 D19 Bleed Seputeh	9	10 D21 Breed Puteh & Ara	11
12	13 D19 Bleed Rima	14	15 D21 Breed Rima & Ara	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Rhino Breeding Observation, 2001

January

Three breeding occurred this month involving two females and one male; Rima and Seputeh with Ara. The first breeding took place on the 10/01/01 between Rima and Ara followed by the second one on the 26/01/01 between Seputeh and Ara. Rima's blood sample was sent to UPM on 29/01/01 for pregnancy test and she was confirmed not pregnant. Therefore, she was paired with Ara on 31/01/01 afternoon and was bred. The next morning, she was again mixed with Ara and again successfully bred.

Rima was predicted coming into estrus between 10/01/01 until 15/01/01. On the 10/01/01 morning, she was paired with Ara around 9.30 a.m. Ara was observed following Rima and try to mount but Rima is not ready. She refused to be mounted and try to challenge the male. She was also vocalized a lot. Aggression was control by calling the rhino names and throwing the fruits especially banana. The rhinos were separated after thirty minutes of mixing.

Around 3.45 p.m., both rhinos were mixed again. Ara mounted Rima after five minutes of mixing but no intromission. He kept following Rima and try to mount when she presents herself. About twelve mountings were observed without any intromission. Erection was only observed on two occasions. On the last mounting, intromission was assisted by Dr. Zainal and lasted for about 21 minutes.

As for Seputeh, she was expected in estrus from 25/01/01 to 29/01/01. She was mixed with Ara on the 25/01/01 around 10.45 a.m. Head butting was observed especially after Seputeh provoked the male. Fruits were used to control the aggression. However, two mountings were recorded despite that the female is not ready. The rhinos were separated when they start to fight for the wallow. The pairing was about 20 minutes.

The next day, the rhinos were paired around 10.45 a.m. Aggression was observed during the first ten minutes of the procedure when the female tried to challenge the male but it was under control. However, the female allowed the male to mount her and about twelve mountings were recorded with one intromission. Unfortunately, it only lasted for about five minutes. The male cannot balance himself on the soggy ground and he slipped away. The rhinos were separated when they looked very exhausted and the procedure was stopped at 12.20 noon.

Around 3.15 p.m., both rhinos were mixed again. Head butting was observed at the beginning but the female then turn away. Ara then starts following Seputeh and mounted her after four minutes of mixing. Six mountings were recorded and the last one resulting the intromission. The female was bred for about thirty minutes.

On 31/01/01, Rima was paired again with Ara based on the blood result from UPM. She was successfully bred for about twenty minutes. The next morning (1/2/01), around 10.50 a.m., she was mixed again with Ara and was bred successfully for about thirty two minutes. Seven mountings were noted with two intromissions during the procedure. The first one was recorded on the sixth mountings and lasted about 12 minutes and the second intromission was observed on the last mounting, which lasted for about 32 minutes.

February

Two females, Rima and Seputeh were successfully bred this month. Based on the last breeding, Seputeh should be on estrus on 16/2/01 and Rima probably coming to estrus on 22/2/01 if both females are not conceived. On 14/2/01, blood was taken from Seputeh for pregnancy test and sent to UPM for analysis. The result was received on 16/2/01 afternoon around 3.45 p.m. and she was confirmed not pregnant. Therefore, she was paired with Ara around 4.00 p.m. the same day and was bred. She was also paired with Ara the next morning around 11.00 a.m. and again was successfully bred.

The breeding of Seputeh and Ara was recorded on two consecutive days. On 16/2/01, they were paired around 4.00 p.m. The first thirty minutes, some aggressions were recorded but it was under control. Seputeh was observed provoking the male and head butting was occurred. Occasionally, the female will turn her back to the male assuming presenting herself and this will be repeated a few times. Therefore, this pair was left together but the aggression is closely monitored.

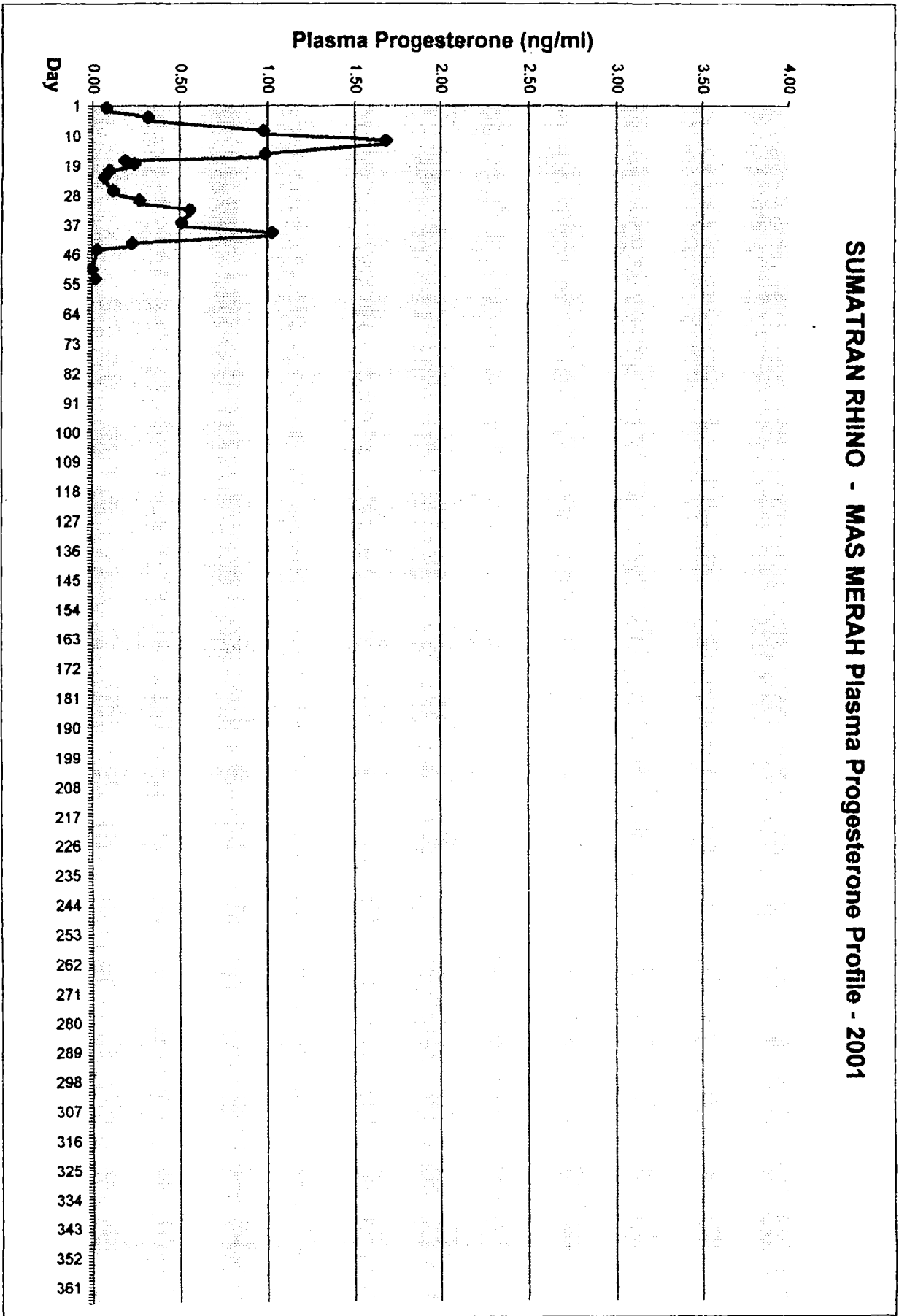
Later, Ara was observed trailing the female and he will smell the female's vulva. This was observed for about five minutes before the first mounting occurred. The event was recorded for about ninety minutes, which resulted in twelve mountings. The first erection was noted on the tenth mountings followed by the eleventh and the last one resulting intromission. She was bred for about 29 minutes with 35 thrusts.

The next day (17/2/01), around 11.00 a.m., the rhinos were paired again by the rangers. Head butting was observed at the first fifteen minutes but under controlled. The trailing event was recorded next and resulting in seven mountings. The intromission was noted during the last mounting and she was bred for 35 minutes with 30 thrusts.

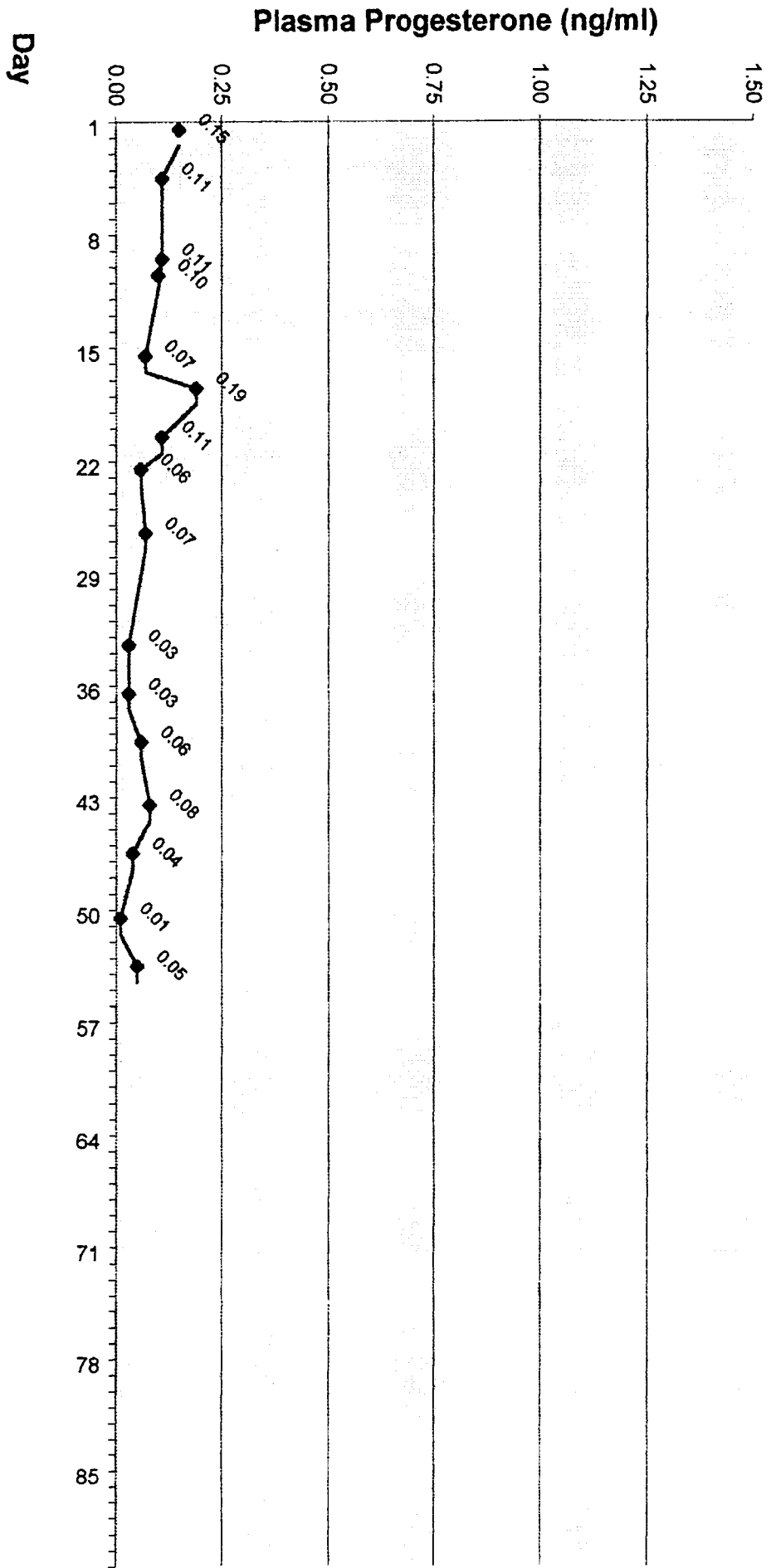
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Mas Merah			Minah			Panjang			Rima			Seputih			
Date	Day	P4 (ng/ml)	Date	Day	P4 (ng/ml)	Date	Day	P4 (ng/ml)	E2 (pg/l)	Date	Day	P4 (ng/ml)	Date	Day	P4 (ng/ml)
1-Jan-01	1	0.08	1-Jan-01	1	0.15	1-Jan-01	1	0.52		1-Jan-01	1	0.67	1-Jan-01	1	0.08
2-Jan-01	2		2-Jan-01	2		2-Jan-01	2			2-Jan-01	2		2-Jan-01	2	
3-Jan-01	3		3-Jan-01	3		3-Jan-01	3			3-Jan-01	3		3-Jan-01	3	
4-Jan-01	4	0.32	4-Jan-01	4	0.11	4-Jan-01	4	0.40		4-Jan-01	4	0.39	4-Jan-01	4	0.15
5-Jan-01	5		5-Jan-01	5		5-Jan-01	5			5-Jan-01	5		5-Jan-01	5	
6-Jan-01	6		6-Jan-01	6		6-Jan-01	6	0.44		6-Jan-01	6	0.11	6-Jan-01	6	0.64
7-Jan-01	7		7-Jan-01	7		7-Jan-01	7			7-Jan-01	7		7-Jan-01	7	
8-Jan-01	8	0.98	8-Jan-01	8		8-Jan-01	8	0.43		8-Jan-01	8	0.09	8-Jan-01	8	1.30
9-Jan-01	9		9-Jan-01	9	0.11	9-Jan-01	9			9-Jan-01	9		9-Jan-01	9	
10-Jan-01	10		10-Jan-01	10	0.10	10-Jan-01	10			10-Jan-01	10	0.17	10-Jan-01	10	1.71
11-Jan-01	11	1.68	11-Jan-01	11		11-Jan-01	11	0.28		11-Jan-01	11		11-Jan-01	11	
12-Jan-01	12		12-Jan-01	12		12-Jan-01	12			12-Jan-01	12		12-Jan-01	12	
13-Jan-01	13		13-Jan-01	13		13-Jan-01	13			13-Jan-01	13		13-Jan-01	13	
14-Jan-01	14		14-Jan-01	14		14-Jan-01	14			14-Jan-01	14		14-Jan-01	14	
15-Jan-01	15	0.99	15-Jan-01	15	0.07	15-Jan-01	15	0.23		15-Jan-01	15	0.36	15-Jan-01	15	1.18
16-Jan-01	16		16-Jan-01	16		16-Jan-01	16			16-Jan-01	16		16-Jan-01	16	
17-Jan-01	17	0.19	17-Jan-01	17	0.19	17-Jan-01	17	0.28		17-Jan-01	17		17-Jan-01	17	0.21
18-Jan-01	18	0.24	18-Jan-01	18		18-Jan-01	18			18-Jan-01	18		18-Jan-01	18	0.31
19-Jan-01	19		19-Jan-01	19		19-Jan-01	19			19-Jan-01	19		19-Jan-01	19	
20-Jan-01	20	0.10	20-Jan-01	20	0.11	20-Jan-01	20	0.13		20-Jan-01	20	1.23	20-Jan-01	20	0.24
21-Jan-01	21		21-Jan-01	21		21-Jan-01	21			21-Jan-01	21		21-Jan-01	21	
22-Jan-01	22	0.07	22-Jan-01	22	0.06	22-Jan-01	22	0.21		22-Jan-01	22		22-Jan-01	22	0.04
23-Jan-01	23		23-Jan-01	23		23-Jan-01	23			23-Jan-01	23		23-Jan-01	23	
24-Jan-01	24		24-Jan-01	24		24-Jan-01	24			24-Jan-01	24		24-Jan-01	24	
25-Jan-01	25		25-Jan-01	25		25-Jan-01	25			25-Jan-01	25	0.92	25-Jan-01	25	0.50
26-Jan-01	26	0.12	26-Jan-01	26	0.07	26-Jan-01	26	0.08		26-Jan-01	26		26-Jan-01	26	
27-Jan-01	27		27-Jan-01	27		27-Jan-01	27			27-Jan-01	27		27-Jan-01	27	
28-Jan-01	28		28-Jan-01	28		28-Jan-01	28			28-Jan-01	28		28-Jan-01	28	
29-Jan-01	29	0.27	29-Jan-01	29		29-Jan-01	29	0.25		29-Jan-01	29	0.15	29-Jan-01	29	
30-Jan-01	30		30-Jan-01	30		30-Jan-01	30			30-Jan-01	30		30-Jan-01	30	
31-Jan-01	31		31-Jan-01	31		31-Jan-01	31			31-Jan-01	31		31-Jan-01	31	
1-Feb-01	32	0.56	1-Feb-01	32		1-Feb-01	32	0.26		1-Feb-01	32	0.07	1-Feb-01	32	
2-Feb-01	33		2-Feb-01	33	0.03	2-Feb-01	33			2-Feb-01	33		2-Feb-01	33	
3-Feb-01	34		3-Feb-01	34		3-Feb-01	34			3-Feb-01	34		3-Feb-01	34	
4-Feb-01	35		4-Feb-01	35		4-Feb-01	35			4-Feb-01	35		4-Feb-01	35	
5-Feb-01	36	0.51	5-Feb-01	36	0.03	5-Feb-01	36	0.19		5-Feb-01	36		5-Feb-01	36	3.14
6-Feb-01	37		6-Feb-01	37		6-Feb-01	37			6-Feb-01	37		6-Feb-01	37	
7-Feb-01	38		7-Feb-01	38		7-Feb-01	38			7-Feb-01	38		7-Feb-01	38	
8-Feb-01	39	1.03	8-Feb-01	39	0.06	8-Feb-01	39	0.14		8-Feb-01	39		8-Feb-01	39	
9-Feb-01	40		9-Feb-01	40		9-Feb-01	40			9-Feb-01	40		9-Feb-01	40	
10-Feb-01	41		10-Feb-01	41		10-Feb-01	41			10-Feb-01	41	1.92	10-Feb-01	41	
11-Feb-01	42	0.23	11-Feb-01	42		11-Feb-01	42			11-Feb-01	42		11-Feb-01	42	
12-Feb-01	43		12-Feb-01	43	0.08	12-Feb-01	43	0.29		12-Feb-01	43	2.35	12-Feb-01	43	0.01
13-Feb-01	44	0.03	13-Feb-01	44		13-Feb-01	44			13-Feb-01	44		13-Feb-01	44	
14-Feb-01	45		14-Feb-01	45		14-Feb-01	45			14-Feb-01	45		14-Feb-01	45	0.03
15-Feb-01	46		15-Feb-01	46	0.04	15-Feb-01	46	0.23		15-Feb-01	46		15-Feb-01	46	
16-Feb-01	47		16-Feb-01	47		16-Feb-01	47			16-Feb-01	47		16-Feb-01	47	
17-Feb-01	48		17-Feb-01	48		17-Feb-01	48			17-Feb-01	48		17-Feb-01	48	
18-Feb-01	49		18-Feb-01	49		18-Feb-01	49			18-Feb-01	49		18-Feb-01	49	
19-Feb-01	50	0.00	19-Feb-01	50	0.01	19-Feb-01	50	0.34		19-Feb-01	50	0.00	19-Feb-01	50	
20-Feb-01	51		20-Feb-01	51		20-Feb-01	51			20-Feb-01	51		20-Feb-01	51	
21-Feb-01	52		21-Feb-01	52		21-Feb-01	52			21-Feb-01	52		21-Feb-01	52	
22-Feb-01	53		22-Feb-01	53	0.05	22-Feb-01	53	0.57		22-Feb-01	53	0.00	22-Feb-01	53	0.39
23-Feb-01	54		23-Feb-01	54		23-Feb-01	54			23-Feb-01	54		23-Feb-01	54	
24-Feb-01	55		24-Feb-01	55		24-Feb-01	55			24-Feb-01	55		24-Feb-01	55	
25-Feb-01	56		25-Feb-01	56		25-Feb-01	56			25-Feb-01	56		25-Feb-01	56	
26-Feb-01	57		26-Feb-01	57		26-Feb-01	57			26-Feb-01	57		26-Feb-01	57	
27-Feb-01	58		27-Feb-01	58		27-Feb-01	58			27-Feb-01	58		27-Feb-01	58	
28-Feb-01	59		28-Feb-01	59		28-Feb-01	59			28-Feb-01	59		28-Feb-01	59	
1-Mar-01	60		1-Mar-01	60		1-Mar-01	60			1-Mar-01	60		1-Mar-01	60	
2-Mar-01	61		2-Mar-01	61		2-Mar-01	61			2-Mar-01	61		2-Mar-01	61	
3-Mar-01	62		3-Mar-01	62		3-Mar-01	62			3-Mar-01	62		3-Mar-01	62	
4-Mar-01	63		4-Mar-01	63		4-Mar-01	63			4-Mar-01	63		4-Mar-01	63	
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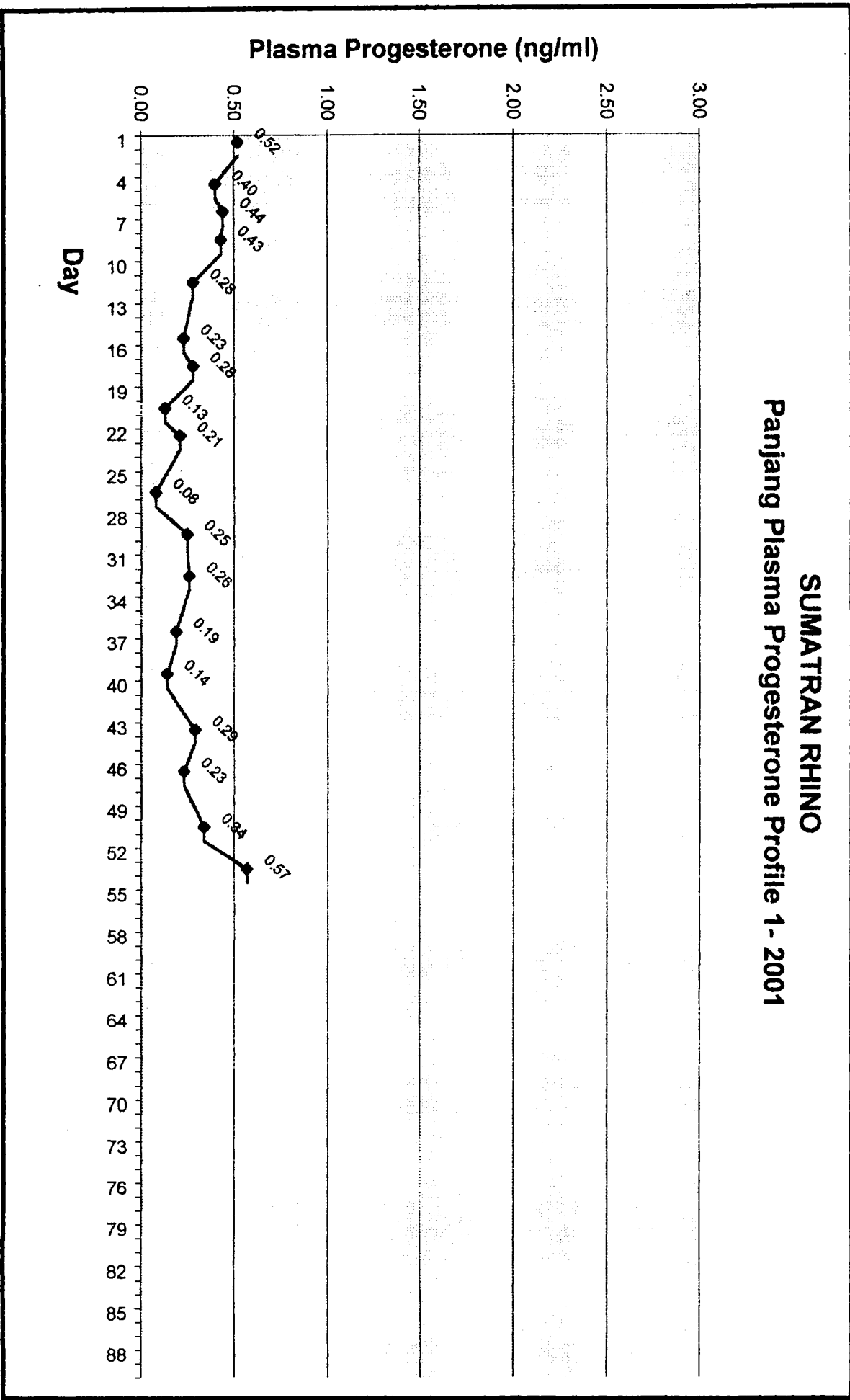
SUMATRAN RHINO - MAS MERAH Plasma Progesterone Profile - 2001



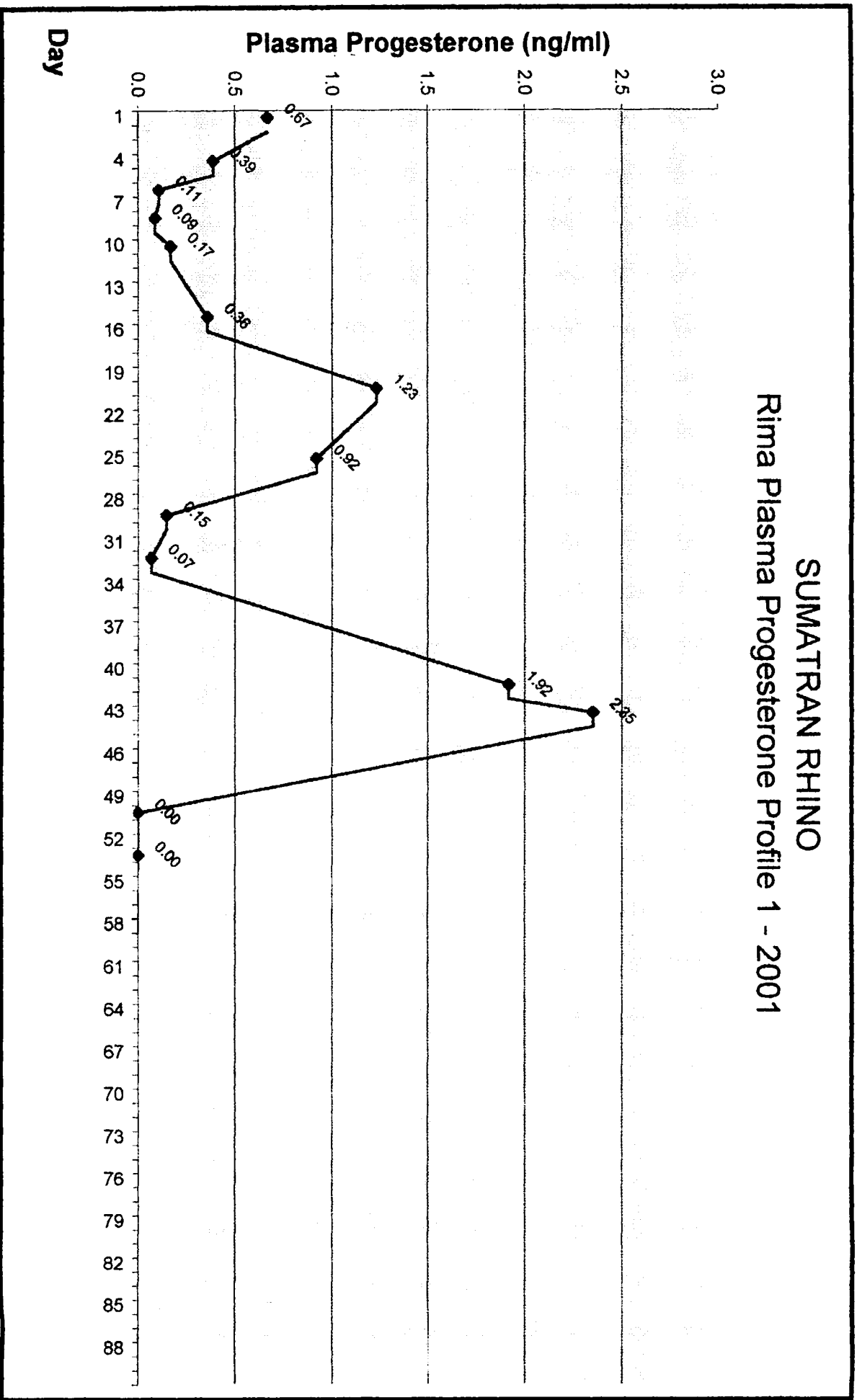
SUMATRAN RHINO
Minah Plasma Progesterone Profile 1 - 2001



SUMATRAN RHINO
Panjang Plasma Progesterone Profile 1- 2001



SUMATRAN RHINO
Rima Plasma Progesterone Profile 1 - 2001



SUMATRAN RHINO
Seputih Plasma Progesterone Profile 1 - 2001

