CHAPTER IV

Results

Part I Study on estrogenic activity in plants.

Table 1 (A,B) demonstrates dose response curves of standard estradiol (E_2) and standard estrone (E_1)(figure 16). Various doses of standard estrogens were subcutaneously injected to immature female mice in divided dose for 3 days successively.

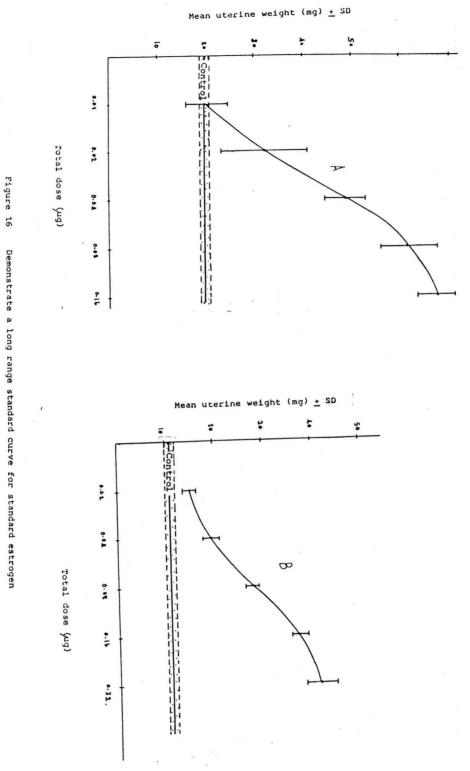
Estradiol : Five dose levels were employed, ranging from 0.01 to 0.16 µg, steep part of dose response curve lies between 0.015 to 0.05 µg.

Estrone : Five dose levels were also employed, ranging from 0.02 to 0.32 μ g, steep part of dose response curve lies between 0.04 to 0.16 μ g.

Estriol : Five dose levels were employed, ranging from 0.01 to 0.16 jug, steep part of dose response curve was not shown. (figure 16 a) Table 1 A,B

	Control		dose	(ع بر)	· · · · · · · · · · · · · · · · · · ·	
	CONCLOS	0.01	0.02	0.04	0.08	0.16
<u>Std.Estradiol</u> (E ₂) Uterine wt.(mg)	20 1.0 7	20. 5. 4. 4		10 0 1 1		
mean <u>+</u> SD	20 .1<u>+</u>0.7	20.6+4.4	32.3+8.8	48.8+4.1	61.7 <u>+</u> 5.7	67 .3<u>+</u>3. 6
No. of mice	10	9	9	8	7	8
Std.Estriol (E3)			•	•••••••••		
Uterine wt.(mg)						
mean + SD	9 . 9 <u>+</u> 2.8	10.2+2.5	15.0 <u>+</u> 4.1	12.4 <u>+</u> 1.5	14.5+2.8	14.2+3.5
No. of mice	12	11	10	8	10	10

	Control		dose (jug)								
	Conclor	0.02	0.04	0.08	0.16	0.32					
Standard Estrone				¥							
(E ₁) Uterine wt.(mg)			а 	8 8 9							
mean <u>+</u> SD	10.8 <u>+</u> 1.1	15.2 <u>+</u> 1.3	19• 5<u>+</u>1• 7	27 .7<u>+</u>1. 2	37.2 <u>+</u> 1.6	41.6 <u>+</u> 3.2					
No. of mice	5	5	4	4	5	5					



A. Estradiol (E_2) . B. Estrone (E_1) .

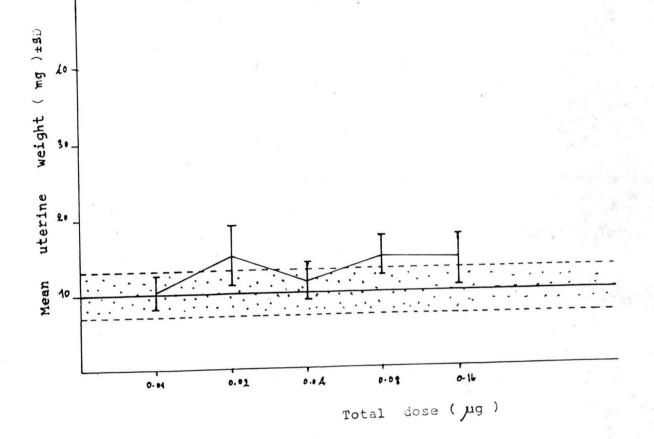


Figure 16A Demonstrate a long range standard curve of estriol (E_3)

Table 2 Demonstrates the results obtained from variety of plants tested, in which increase in weight, occurrence of vagina opening and cornification of vaginal epithelium were observed :

There were no alteration in uterine weight and other parameters in Ocimum basilicum, Ocimum sanctum, Alpinia galanga, Zingiber cassumunar, Citrus hystrix, Gastrochilus panduratus, Momordica charantia both large and small variety (see figure 17, 18, 20, 21 p. 75, 76, 78, 79, 81).

Volatile oil of Cympobogon citratus did not show a uterotropic activity, alcohol extract induced uterine enlargement in the first experiment. When the experiment was repeated, no activity was observed (see figure 19 & 23 p. 77, 81). <u>Piper betel</u> and <u>Vigna sesquipedalis</u> induced uterine enlargement in the first experiment when the experiment was repeated, there was little activity as calculated in term of standard estrone (see figure 19& 22 p. 77 & 80).

Piper betel 1.04 mg extract which derived from 2.4 gm of fresh plants, relative potency when expressed as standard estrone was 0.0257/µg. Repeat of this experiment, 0.52 mg of extract which is equivalent to 1.2 gm of fresh plant possess estrogenic activity equal to0.0239µg of standard estrone.

Alcoholic extract of Vigna <u>sesquipedalis</u> possessed estrogenic activity. Relative potency expressed as standard estradiol was 0.0202 µg from 2.15 mg of extract which equivalent to

0.088 gm of fresh plant. Repeat this experiment using standard estrone, relative potency was 0.0335 µg estrone in 0.54 mg of extract which equivalent to 0.022 gm of fresh plant. Alcoholic extract of <u>Cymbopogon citratus</u>, at low dose, possessed estrogenic activity, and relative potency expressed as standard estradiol was 0.0259 µg in 3.99 mg of extract which is equivalent to 0.11 gm fresh plant. Table 2.

			Std. E	doses (ug)	Std. E	doses(µg)	Unknown	doses (mg)		Potency of	Design of	Index of
Plants extracts	Parameter	Control	0.02	0.06	0.04	0.12	0.5	1.5	4.5	unknown	assay	precision
	No. of mice	6	• 7	6	5	5	6	6	6			
<u>O.basilicum</u> (oil) Fig. 17 p. 75	Uterine wt.(mg) mean <u>+</u> SD		21.9 <u>+</u> 4.3	39.0 <u>+</u> 4.3	18.6 <u>+</u> 2.5	27.8 <u>+</u> 3.8	16.4 <u>+</u> 2.8	13.2 <u>+</u> 3.9	11.4 <u>+</u> 2.6	none	-	-
•	Vag. opening	-	÷	+	+	•	-	-	-	an a		
	Vag. cornifica- tion	. –	+	+	+	•	-	-	-			
Plants extracts	Parameter	er Control Std. E2 doses(ug) Std. E1 doses(ug				doses(µg)	Unknown doses (mg)			Potency of	Design of	Index of
· ranco excideta	Farameter	concror	0.015	0.06	0.02	0.08	0.08		0.3	unknown	assay	precision
O.sanctum (oil)	No. of mice Uterine wt(mg)	6	7	5	6	5	[′] 5		5			
Fig. 18 p. 76	mean <u>+</u> SD	12.4+2.2	21.2 <u>+</u> 3.0	36.1 <u>+</u> 4.6	14.0 <u>+</u> 5.4	20.8 <u>+</u> 1.8	9.8 <u>+</u> 3.7		7.8 <u>+</u> 1.0	none	-	-
	Vag. opening	-	-	+	_	+	-		-			
	Vag.cornifica- tion	-	-	+	-	÷	-					-
	2		Std. E ₂ d	oses (ug)	std. E ₁ de	oses (µg)	Unkr	iown doses (m	g)	Potency of	Design of	Index of
Plants extracts	Parameter	Control	0.015	0.06	0.02	0.08	0.96		3.8	unknown	assay	precision
Zingiber cassumunar			5	7	5	7	7		7			
Fig 20 p. 78	mean <u>+</u> SD	12.5 <u>+</u> 2.6	20.6+2.3	46.2 <u>+</u> 7.1	13.6 <u>+</u> 4.8	24.5+5.2	12.3+2.3		1.2+4.3	none	-	-
	Vag. opening	-	-	+	-	•	-		-			
	Vag.cornifica- tion	-	-	+	-	·	-		-			

Plants extracts	Parameter	Control	L.	oses (jug)	Std. E ₁	(jug)	Unknown dose	es (mg)	Potency of	Design of	Index of
Fiants extracts	Farameter		0.015	0.06	0.02	0•08	2.4	9.6	unknown	assay	precision
	No. of mice	6	• 5	7	5	7	7	7			
<u>Alpinia galanga</u> Fig. 20 p. 78	Uterine wt.(mg) mean <u>+</u> SD	12.5 <u>+</u> 2.6	20.6 <u>+</u> 2.3	46.2 <u>+</u> 7.1	13.6 <u>+</u> 4.8	24.5 <u>+</u> 5.2	14•3 <u>+</u> 4•6	12•7 <u>+</u> 1•5	none	-	-
•	Vag. opening	-	-	+	-	+	-	-			
	Vag.cornifica- tion	-	-	+	-	+	-				
			2		Std. E, Yug)		Unknown doses (mg)		Potency of	Design of	Index of
Plants extracts	Parameter	Control	0.015	0.06	0.02	0.08	2.0	8.0	unknown	assay	precision
M. charantia	No. of mice Uterine wt.(mg)	6	5	7	5	7	7	7			
Fig. 20 p. 78	mean + SD	12.5 <u>+</u> 2.6	20.6+2.3	46.2 <u>+</u> 7.1	13.6+4.8	24.5+5.2	13.9 <u>+</u> 4.8	14.3+8.3	none	-	-
	Vag.opening	-	-	+	-	+	-	-			
	Vag.cornifica- tion	-	-	+	-	+	-	-			
			std. E2 d	oses (µg)	Std. E1	(jug)	Unknown dos	ses (mg)	Potency of	Design of	Index of
Plants extracts	Parameter	Control	0.015	0.06	0.02	0.08	5.8	23.2	unknown	assay	precision
Cymbopogon citratu	No. of mice SUterine wt.(mg)	6	6	5	4	4	6	6			
Fig. 23 p. 81	mean + SD	13.0 <u>+</u> 4.1	28.9 <u>+</u> 5.3	46.4+8.3	17.4+3.7	28.1 <u>+</u> 8.2	12.8+3.7	17.1 <u>+</u> 8	none	-	-
*	Vag.opening	-	-	•	- "	•	-	-			
	Vag.cornifica- tion	-	-	+	-	•	-	-			

	1				-				[]	· ·	1
		Control	Std. E ₂ d	ose (µg)	Std. E ₁	dose (µg)	Unknown dose	s (mg)	Potency of	Design of	Index of
Plants extracts	Parameter	Control	0.015	0.06	0.02	0.08	0.52	2.08	unknown	assay	precision
	No. of mice	6	6'	5	4	4	5	5			
Piper betel Fig. 21 p. 79	Uterine wt.(mg) mean <u>+</u> SD	13.0 <u>+</u> 4.1	28.9 <u>+</u> 5.3	46.4 <u>+</u> 8.3	17.4 <u>+</u> 3.7	28.1 <u>+</u> 8.2	18.5 <u>+</u> 3.1	25.3 <u>+</u> 12.0	0.0257ug of E ₁	4 point	0.49
	Vag. opening	-	-	+	-	+	-	-	in 1.04mgExt	7	
	Vag. cornifica- tion	-	-	• •	-	+		-	(2.4gm fresh plant)		
	<u> </u>			Std. E, dose (µg)		Unknown doses (mg)		Potency of	Design of	Index of	
Plants extracts				0.08		0.13	0.52	unknown	assay	precision	
	No. of mice	5		5	5		5	5			
Piper betel (Repeat)	Uterine wt.(mg) mean <u>+</u> SD	9.5 <u>+</u> 3.6	15.	2 <u>+</u> 1.3	27.	7 <u>+</u> 1.2	11.8+1.5	14.0+3.2	0.0239 of E	3 point	0.12
Fig. 19 p. 77	Vag. opening	-		-	+		-	-	<pre>in 0.52mgExt (1.2gm fresh</pre>		
	Vag.cornifica- tion	-		-	+		-	-	plant)		
			Std. E2	dose (µg)	Std. F1	lose (ug)	Unknown dose	s (mg)	Potency of	Design of	Index of
Plants extracts	Parameter	Control	0.015	0.06	0.02	0.08	1.4	6.8	unknown	assay	precision
Citrus hystrix	No. of mice Uterine wt.(mg)	6	4	4	5	5	5	5			
Fig. 21 p. 79	mean <u>+</u> SD	7.9 <u>+</u> 0.3	18.6 <u>+</u> 0.9	42.4+1.8	13.8 <u>+</u> 4.7	20.8+2.0	8.7 <u>+</u> 1.6	8.8+0.2			
	Vag. opening	-	-	-	-	•	-	-	None	-	-
	Vag.cornifica- tion	-	-	-	-	•	- 	_			

· · · · · · · · · · · · · · · · · · ·	1		1			······	[1		
Plants extracts	Parameter	Control	Std.E2d	oses (µg)	Std.E.1	oses (µg)	Unk	nown do	oses (mo	g)	Potency of	Design of	Index of
Fiants extracts	Parameter		0.015	0.06	0.02	0.08	13.3			40.0	unknown	assay	precision
M. charantia	No. of mice Uterine wt.(mg)	6	4	4	5	5	6			6			
(small variety)	mean <u>+</u> SD	7.9 <u>+</u> 0.3	18.6 <u>+</u> 0.9	42.4 <u>+</u> 1.8	13.8 <u>+</u> 4.7	20.8 <u>+</u> 2.0	9.6 <u>+</u>	1.9		9.0 <u>+</u> 1.2	none	-	-
Fig. 21 p. 79	Vag. opening	-	-	+	-	+	-			-			
	Vag.cornifica- tion	-	-	+	-	÷.	-			-			
				Std. E, doses (ug)		, Unk	Unknown doses (mg)			Potency of	Design of	Index of	
Plants extracts	Parameter	Control		.02		.08	0.8	3.	.2	12.9	unknown	assay	precision
Gastrochilus	No. of mice Uterine wt.(mg)	5		5		6	6	6	5	6			
panduratus	mean <u>+</u> SD	16.0 <u>+</u> 2.9	29	•3 <u>+</u> 4•5	32.	9 <u>+</u> 8•6	15.4 <u>+</u> 4.3	18.	.1 <u>+</u> 5.4	14.2 <u>+</u> 3.8	none		-
Fig. 23 p. 81	Vag. opening	-		-		•		-	-	-			
	Vag.cornifica- tion	-		-		•	-	-	-	-			
				Std. E2 d	loses (µg)		Unk	nown do	oses (m	g)	Potency of	Design of	Index of
Plants extracts	Parameter	Control	0	.02	0.	.08	4.0	16.	•0	64.0	unknown	assay	precision
Cymbopogon citratus	No. of mice Uterine wt.(mg)	5		5		6	6	6		6	وير 0.0259 يو		
(Alcohol e tract)	mean <u>+</u> SD	16.0 <u>+</u> 2.9	29	•3 <u>+</u> 4•5	32.9	9 <u>+</u> 8.6	23.3 <u>+</u> 10.8	11.3	3 <u>+</u> 2.8	11.6 <u>+</u> 0.6	of E ₂ in 3.99mgExt	3 point	0.37
Fig. 23 p. 81	Vag. opening	-		-		+	-	-		-	(0.11gm fresh		
	Vag.cornifica- tion	-		-		+	-	-		-	plant)		4

			Std. E dos	es (µg)	U	nknown do s	es (mg)		Potency of	Design of	Index of
Plants extracts	Parameter	Control	0.04	0.16	1.	0	4.	.0	unknown	assay	precision
Cymbopogon citratus (Repeat) Fig. 23 p. 81	No. of mice Uterine wtimg) mean <u>+</u> SD Vag. opening Vag.cornifica- tion	5 10.8 <u>+</u> 1.1 - -	4 19.5 <u>+</u> 1.7 + +	5 37•2 <u>+</u> 1•6 + +	5 12. –	4 <u>+</u> 1.7	10,	5 •0 <u>+</u> 1•2 -	none	-	-
Plants extracts	Parameter	Control	Std.E ₂ doses	(عر) 0.06	0.54	nknown dos 2.15	es (mg) 8.58	34.0	Potency of unknown	Design of assay	Index of precision
Vigna sesquipedalis	No. of mice Uterine wt.(mg)	5	5	6	5	5	5	6			·
Fig. 22 p. 80	mean <u>+</u> SD	19.3 <u>+</u> 2.8	25.2 <u>+</u> 2.7	• 57.1 <u>+</u> 8.8	20.1 <u>+</u> 3.7	28.5 <u>+</u> 7.5	20.3 <u>+</u> 5.6	23.2 <u>+</u> 7.4	0.0202 Jug of E ₂	3 point	0.18
	Vag. o Vag.cornifica- tion	-		+	-	-	-	-	2 in 2.15 mgEx (0.09 gm fres plant)		
			Std. E doses	(وس)		Unknown do	oses (mg)		Potency of	Design of	Index of
Plants extracts	Parameter	Control	0.04	0.16	0.	54	2.	15	unknown	assay	precision
Vigna seequipedali8 (Repeat)	No. of mice Uterine wt.(mg) mean <u>+</u> SD	10.8 <u>+</u> 1.1	4 19•5 <u>+</u> 1•7	6 37.2 <u>+</u> 1.6		5 .0 <u>+</u> 9.0		5 6 <u>+</u> 3.0	0.0335 µg of E ₁ in 0.54 mgExt		0.09
Fig. 22 p. 80	Vag. opening Vag.cornifica- tion	_5 _	+	* •		-		-	(0.02gm fresh plant)	5 e	

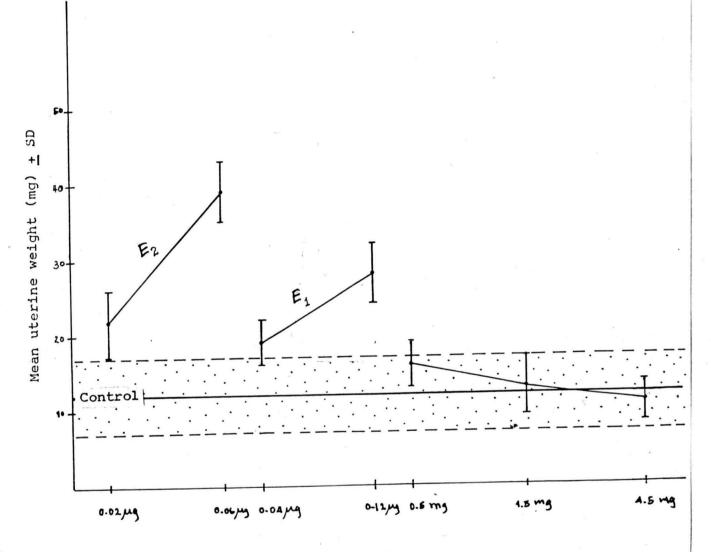
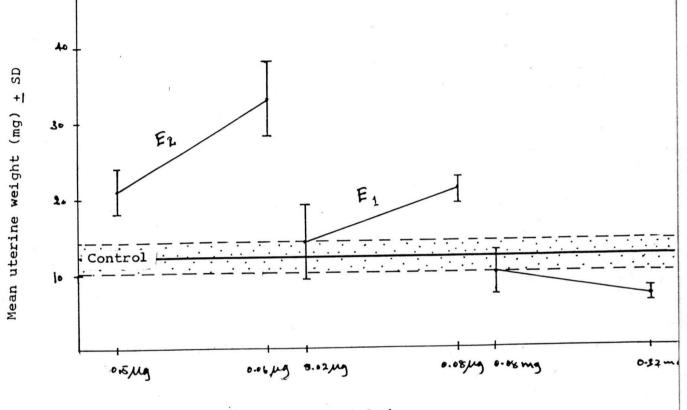




Figure 17

Demonstrates the results obtained from estrogenic activity testing of Ocimum basilicum.

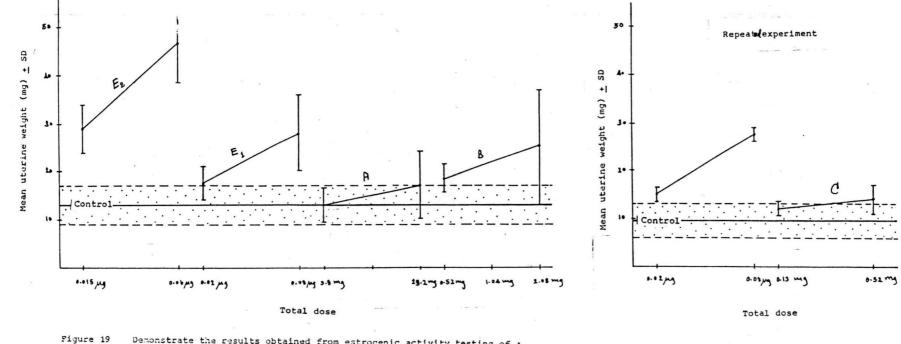


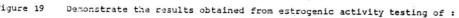
Total dose

Figure 18

Demonstrates the results obtained from estrogenic activity

testing of Ocimum sanctum.





- A. Cymbopogon citratus (oil). .B. Piper betel.
- C. Piper betel repeated.

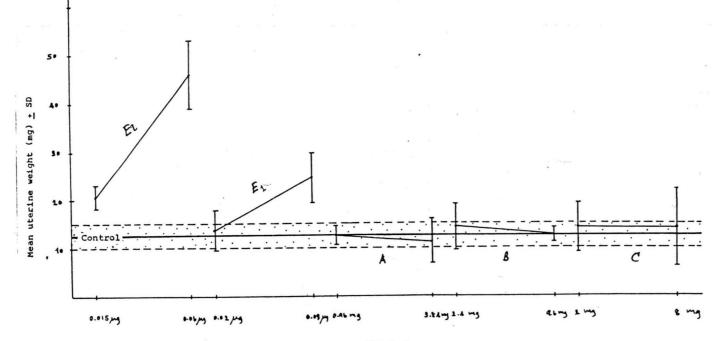
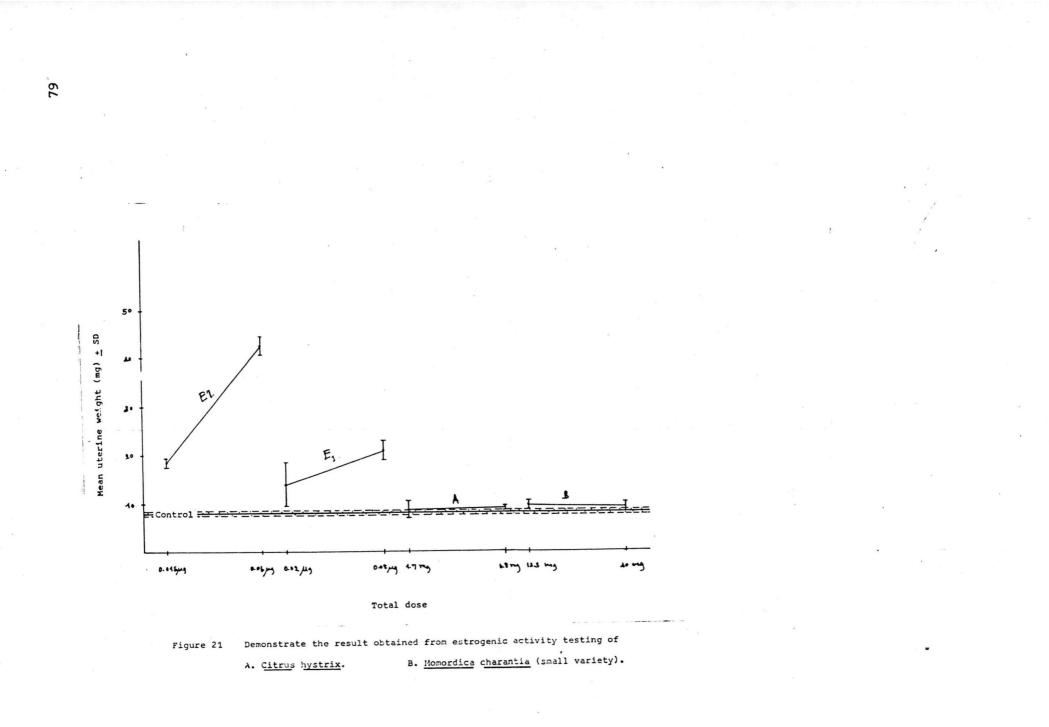




Figure 20 Demonstrate the results obtained from estrogenic activity testing of :

A. Zingiber cassumunar. B. Alpina galanga.

C. Momerdica charantia (large variety).



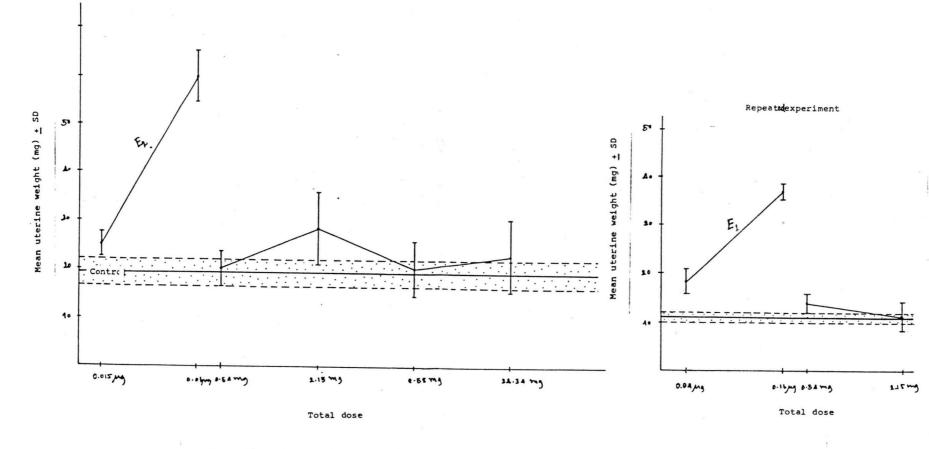
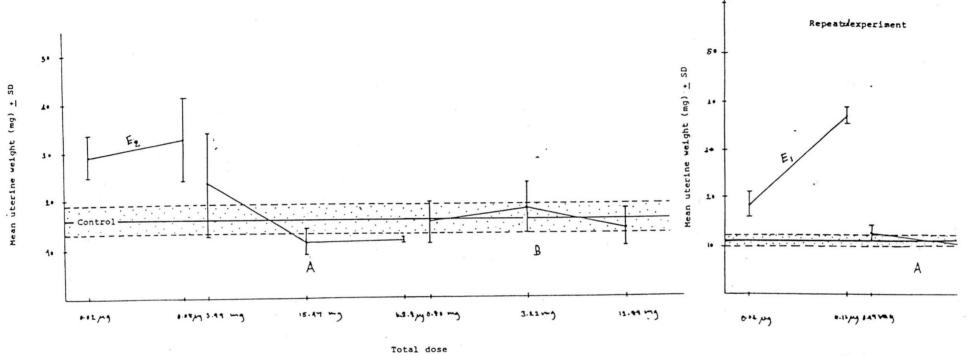


Figure 22 Demonstrates the results obtained from estrogenic activity testing of

Vigna sesquipedalis.



Total dose

Figure 23 Demonstrates the results obtained from estrogenic activity testing of

A. Cymbopogon citratus (alcohol extract).

B. Gastrochilus panduratus (alcohol extract).

Part II Study on antispermatogenic effect of various plant extracts in rats and mice.

Table 3-6 showed the results obtained from antispermatogenic study of <u>M. charantia</u> (small variety).

Table 7-10 showed the results obtained from antispermatogenic study of <u>M. charantia</u> (large variety).

Table 11-18 showed the results obtained from antispermatogenic study of O. basilicum.

Table 19-22 showed the results obtained from antispermatogenic study of <u>O. sanctum</u>.



Tab	le	3

No.		Total sperm		erm lity	W	eight (m	g)	Body w	t.(gm)
of	Mating	count		LICY	epid.	testes	SV & total	start	end
mice		(mill)	%	grade			prost.	*	
	J	÷							
Contr	01								
1	·	25.2	49	2	36.0	107	259	32.0	33.5
2	+	21.5	58	3	38.4	109	336	35.0	36.0
3	-	28.6	50	3	38.4	96	354	35.0	37.0
4	-	23.6	49	2	37.0	95	204	31.0	31.0
5	-	21.5	31	2	39.0	108	315	31.5	30.0
6	-	22.9	42	2	35.0	114	258	32.5	31.5
7	+	17.6	50	1	36.2	114	228	32.7	32.5
8	+	15.2	55	3	38.0	103	243	31.8	31.0
	37.5%							0	67
Mean		22.0	48.0	2.2	37.2	105.7	274.6	32.7	32.8
SEM		1.5	2.9	0.3	5.0	2.6	19.1	0.8	0.9
Exper	iment								
1	+	23.6	41	3	38.0	110	289	32.0	30.0
2	+	16.2	37	2	41.4	127	336	32.5	32.5
2 3	-	21.7	40	2	40.8	116	350	35.5	35.0
4	-	26.6	31	3	38.0	112	365	33.0	32.0
5	-	20.6	40	3	36.0	115	336	31.5	30.5
6	-	35.5	57	2	39.0	102	312	30.5	28.0
7	+	22.8	55	3	34.2	112	224	32.5	27.0
8	-	26.7	36	2	38.0	112	337	34.0	33.0
9	-	14.6	31	2	35.6	107	296	34.0	34.0
10	-	17.4	3 8	3	30.0	102	234	31.0	30.0
k.	30.0%								
Mean	. 1	22.6	42.6	2.5	37.1	111.5	307.9	32.6	31.2
SEM	5	1.9	3.7	0.2	1.1	2.2	15.1	0.5	0.8
t-test		NS	NS	NS	NS	NS	NS	NS	NS

Experiment 1 Effects of alcoholic extract from the fruit of <u>M. charantia</u> (small variety) on spermatogenesis in mice.

Table 3

Demonstrates the results obtained from expt. 1 inwhich the extract was given orally daily in dosage of 400 mg/kg/day for a period of 15 days. Total sperm count, sperm motility, weight of testis, epididymis, prostate&seminal vesicles in control and experiment groupswere shown. There was no statistical significant difference in all of the parameters measured. 37.5%, 30% of mating positive was observed in control and experiment groups respectively.

Table	4
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		Total			1				
No.		sperm	Sper		2 8	Weig	tht (mg)	Body	wt.(g
of	Mating		motil	.ity	1				
mice		(mill)			epid.	testes	SV & total	start	end
	÷		% gr	ade			prost.		
Contr	ol.			2			a	· · · · · · · · · · · · · · · ·	
1	· _	27.3	63	3	32.0	105.0	262.6	27.5	29.3
2	-	21.2	50	2	34.0	82.0	336.0	30.0	32.5
3	-	20.2	35	1	28.0	94.0	274.0	29.5	
4		24.7	34	1	40.0				33.5
	-					114.0	360.0	30.7	35.0
5	, + .	19.4	40	1	42.8	110.0	390.8	28.5	34.0
6	+	27.2	49	3	37.6	120.0	228.6	29.8	29.5
7	~	21.0	55	1	36.0	112.0	251.0	28.7	27.0
8		22.6	58	2	39.8	112.8	336.4	28.6	37.0
9	-	18.7	14	1	40.0	114.5	419.0	28.3	23.0
	22.2%								
lean		22.5	44.2	1.7	36.7	107.1	320.9	29.1	32.3
SEM		1.1	5.0	0.3	1.6	3.9	22.8	0.3	1.0
Experi	Lment		P.						
1	-	20.1	40	2	32.0	103.2	348.4	29.5	31.0
2		15.3	57	3	33.0	102.2	280.0	28.5	33.5
3	-	19.1	47	2	39.6	125.0	326.6	31.6	
4		18.8	39	1	38.0	114.2			34.0
5							422.4	30.5	34.0
	-	12.8	36	1	28.0	92.0	151.0	30.0	29.0
6		19.7	35	1	34.0	103.8	256.6	27.5	28.0
7	-	17.6	41	2	34.0	98.4	352.8	28.0	32.0
8	-	19.2	45	3	31.0	104.0	306.0	27.5	28.5
	0%						ļ		
lean		17.8	42.5	1.9	33.7	105.3	305.5	29.1	31.2
SEM		0.9	2.5	0.3	1.3	3.6	28.4	0.5	0.9
test	s	p (0.01	NS	NS	NS	NS	NS	NS	NS

Table 4 Demonstrates the results obtained from experiment 1 , extract was given orally and daily in dose of 400 mg/kg/day for a period of 60 days. There was a statistical significant reduction in total sperm count (p <0.01), while other parameters were not altered. Only control group showed a 22.2% of mating positive.

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Ta	ble	5

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No.	i i	T otal sperm	Sr	berm	W	leight (m	Body	wt.(gm)	
of mice	Mating	count (mill)		tility	epid.	testes	SV & total prost.	start	end
			% (grade			prosc.		
Contro	ol	† • • • •	1		1 -				
1	-	12.1	52	2	30	61.6	378	33.4	34.0
2	-	19.0	41	3	34	109	251	33.0	32.0
3	-	26.2	32	2	34	100	325	29.7	32.0
4	+	23.2	47	3	34	106	273	32.5	30.0
5	-	19.8	50	3	39	111	335	34.0	36.0
6	-	14.1	33	1	30	96	250	31.8	36.0
7	-	23.9	35	1	38	111	291	35.5	32.0
8	-	24.9	36	1	36	113	287	32.7	33.5
9	-	14.7	5	1	54	110	220	31.5	33.0
10	-	15.1	31	1	35	88	317	34.0	33.0
	10%					•		-	
Mean		19.3	36.2	1.8	35.9	100.6	292.7	32.8	33.1
SEM		1.6	4.2	0.3	1.4	5.0	4.9	0.5	0.6
			i						
Experi	Iment								
1	; +	25.6	36	2	36	119	256	31.8	32.0
2	_	18.6	40	2	32	103	260	33.0	31.0
3	-	26.3	27	1	37	103	321	32.0	33.0
4	-	21.3	39	2	34	104	202	32.5	31.0
5	-	31.7	34	2	38	123	406	34.7	34.0
6	-	15.3	30	1	30	90	260	30.0	31.8
7	-	19.3	46	3	34	88	306	35.0	34.0
8 9	-	27.3	43	3	43	139	250	29.0	29.8
9 10		19.6 23.7	46	2 3	32	104	332	30.5	34.5
10	10%	23.1	52	3	43	114	270	36.5	33.2
	108	22.9	39.3	2.1	36.4	108.7	286.3	32.5	32.4
Mean	1	/	~ ~ ~ ~	- • ·	200.4	1000/	200.3	52.0	32.4
Mean SEM		1.6	2.4	0.2	2.2	4.9	17.9	0.7	0.5

Demonstrates the results obtained from expt. 1 the extract was given orally and daily in dose of 800 mg/kg/day for a period of 15 days. There was no statistical significant difference in all the parameters measured. Moreover, percentage of mating positive animals was not reduced in experimental group.

No.		Total	-	erm ility	Weight (mg)			Body	wt.(gm)
of mice	Mating	count (mill)		grade	epid.	testes	SV & total prost.	start	end
Contro	<u>1</u>								
1	+	23.0	42	2	40	111	340	33.5	35.0
2 3	+	16.4	30	1	40	105	300	32.4	34.0
	-	22.4	30	2	39	100	320	31.3	30.8
4	+	28.2	32	1	41	108	269	34.3	36.0
5	+	17.9	39	2	38	111	280	32.8	34.0
6	+	42.6	79	3	40	130	294	32.4	32.0
7 8	+	25.3	50	3	40	112	276	33.5	35.0
9	+	26.6 25.2	53 50	3 2	39	135	365	34.0	36.0
,	т	23.2	50	2	38	113	263	32.0	33.0
	88 .9%								
Mean		25.3	45.0	2.1	39.4	114.0	301.1	32.9	3 4.0
SEM		2.5	5.2	0.8	0.3	3.8	11.6	0.3	0.6
Exper	iment								
1	+	21.3	43	2	32	108	310	35.5	32.0
2	+	26.2	61	3	35	120	316	32.0	33.0
3	; +	26.2	43	2	28	98	146	32.5	35.5
4	-		41	2	38	102	424	32.3	34.0
5	+	34.6	35	2	38	125		* 35.5	36.0
6	+	25.6	30	1	36	124	280	30.2	30.0
7	+	23.2	30	1	36	96	420	31.5	32.0
8	; +	24.7	59	3	36	109	310	31.4	32.0
10	-	28.5	46	3	37	120	362	32.5	
10	+	26.1	28	3	40	114	265	31.5	32.0
Mean	80%	25.6	11 0	2 2	25 6		0.4.4		
			44.6	2.2	35.6	111.6	311.3	32.5	32.9
SEM		1.3	3.6	0.2	1.1	3.4	25.5	0.5	0.6
t-tes	t	NS	NS	NS	NS	NS	NS	NS	NS

Demonstrates the results obtained from expt. 1 the extract was given orally and daily in dose of 800 mg/kg/day for a period of 60 days. There was no statistical significant difference in all of the parameters measured. 88.9%, 80% of mating positive was observed in control and experiment groups respectively.

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No. of	Mating	Total sperm	mot	erm ility	W	eight (m	lg)	Body	wt.(gm)
mice	macing	(mill)		grade	epid.	testes	SV & total prost.	start	end
Contro	<u>ol</u>							1	
1	-	27.0	53	3	30.0	105	260	28.5	29.0
2	-	20.5	48	3	32.0	107	313	30.3	30.0
3	+	21.0	53	2	34.0	80	348	28.4	29.0
4	-	25.7	43	2	31.0	110	233	28.5	28.0
5 6	-	26.5	45	3	35.0	99	225	29.5	30.0
6 7		16.5	53	2 3	31. 4 33. 0	99 107	348 388	31.0 29.1	31.5 30.0
8	+	22.7	47	3	34.0	109	280	28.3	31.0
9	· •	13.6	45	2	33.0	106	303	29.5	30.0
10	-	15.9	45	3	34.0	107	255	29.8	31.0
	20%								
Mean		21.2	47.2	2.6	32.7	102.9	295.3	29.3	29.9
SEM		1.5	1.4	0.2	0.5	2.8	17.1	0.3	0.3
Experi	iment								
1	+	17.0	40	2	31.0	103	254	29.4	31.0
2	-	18.2	49	3	32.0	110	244	28.5	29.0
3	-	19.9	39	2	27.0	90	255	31.2	32.0
4	-	20.5	44	3	33.8	109	309	28.0	29.0
5	-	12.9	28	1	28.0	106	243	28.5	30.0
6 7	+	20.9	48 40	3	33.0	114	242	31.1	30.0
8		16.2 22.2	40	1 2	32.0 31.4	110 104	291 262	30.2 32.3	32.0 32.0
9	-	15.9	45	1	29.0	104	229	30.5	
10	-	19.4	45	2	32.5	92	315	29.2	30.0
	20%								
Mean		18.3	42.1	2.0	30.9	104.7	264.4	29.9	30.6
SEM		0.9	1.9	0.3	0.7	2.5	9.5	0.4	0.4
t-tes	t	NS	NS	NS	NS	NS	NS	NS	NS

Experiment 2 Effects of alcoholic extract from the fruit of <u>M. charantia</u> (large variety) on spermatogenesis in mice.

Table 7

Demonstrates the results obtained from expt. 2. The extract was given orally and daily in dose of 200 mg/kg/day for a period of 15 days. There was no statistical significant difference in all of the parameters measured. Percentage of mating positive animals was not reduced in experimental group.

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T	ab	1	е	8
1	au	1	C	0

No.		Total sperm	1		W	eight (Body	wt.(gm)	
of mice	Mating				epid.	testes	SV & total prost.	start	end
Contr	ol			X					
1	+	23.2	45	2	41.2	104.0	258.0	34.0	36.5
2	-	26.5	43	2	42.0	119.0	412.0	33.0	37.0
3		24.6	44	3	40.4	110.6	289.0	33.0	36.0
4	-	26.0	46	2	40.0	108.0	396.0	34.5	38.0
5	+	21.2	48	2	42.0	113.0	318.6	34.2	39.0
6		18.2	44	2	38.0	81.0	334.4	32.4	35.8
7	-	20.2	41	2	40.0	112.4	382.8	33.0	32.0
8	-	14.5	23	1	40.8	102.0	278.0	28.5	38.0
9	-	25.1	50	2	46.0	128.0	230.0	28.5	32.0
10	+	20.4	38	2	38.0	102.4	300.0	29.6	30.0
	3 0%								
Mean		22.0	42.2	2.0	: 40.9	108.0	319.9	32.1	35.4
SEM		1.2	2.4	0.2	0.7	3.9	19.3	0.7	1.0
Exper	iment					:			
1	+	20.9	47	2	40.0	108.8	280.0	32.3	34.3
2	-	28.2	46	2	36.6	110.0	389.0	28.8	30.0
3	-	18.3	47	2	39.0	110.0	281.4	34.0	37.0
4	-	16.2	62	3	42.4	95.0	371.4	31.2	32.0
5	-	17.2	29	1	41.6	116.0	299.0	31.7	35.4
6	-	25.0	43	2	45.0	120.0	430.0	3.3.3	37.0
7	-	23.4	49	2	37.0	94.0	374.0	28.4	31.0
8	-	6.6	14	1	39.0	112.0	287.0	30.0	32.0
9	-	21.2	45	2	46.0	130.8	328.0	32.6	40.0
10	-	7.6	11	0.,1	44.0	114.0	248.0	34.5	35.0
	10%								
Mean		18.5	39.3	1.7	41.1	111.2	328.8	31.7	34.4
SEM		2.2	5.1	0.2	1.0	3.4	18.7	0.7	1.0
t-tes	t	NS	NS	NS	NS	NS	NS	NS	NS

Table 8 Demonstrates the results obtained from expt. The extract was given orally and daily in dose of 200 mg/kg/day for a period of 60 days. There was no statistical significant difference in all of the parameters measured. 30%, 10% of mating positive was observed in control and experiment groups respectively.

rabie									
No. of	Mating	Total sperm	-	erm ility	Ν	Weight (m	ng)	Body w	t. (gm)
mice	Indering	(mill)	%	grade	epid.	testes	SV & total prost.	start	end
Contr	<u>ol</u>	·.							1
1	-	20.9	35	2	26.2	91.0	400	27.5	30.4
2	-	30.2	46	3	32.6	130.0	335	30.0	33.0
3	+	20.5	40	2	28.4	97.6	350	29.5	32.0
4		27.4	41	2	30.0	106.4	354	30.7	33.0
5	-	25.5	42	2	30.0	110.0	346	28.5	31.7
6	+	25.5	50	2	29.0	116.0	385	29.8	31.7
7	-	14.4	47	2	28.0	100.0	288	28.7	34.2
8	-	22.5	52	3	26.0	88.0	300	27.6	30.0
9	`	16.4	55	3	27.0	66.0	300	28.3	30.8
10	+	18.9	46	2	28.0	103.0	352	28.7	30.5
	30%								
Mean		22.2	45.4	4 2.3	28.5	100.8	341	28.9	31.7
SEM		1.6	1.	9 0.1	0.6	5.5	11.6	0.3	0.4
Exper	iment								
1	+	17.5	42	2	30.0	99.0	360.0	29.5	30.0
2	-	26.0	51	3	25.0	90.0	205.8	28.5	24.5
3	-	26.1	49	2	34.0	112.0	266.4	31.6	32.5
4	+	18.5	50	2,3	30.0	116.2	218.0	30.5	34.0
5	-	20.5	43	2	28.0	112.0	224.0	30.0	33.6
6	-	22.4	56	3	30.0	110.0	302.0	27.5	30.2
7	+	27.5	48	3	33.0	102.0	330.0	28.0	31.8
8	-	15.4	65	3	32.4	106.0	295.0	27.5	30.8
9	-	22.5	42	2	31.0	105.0	330.0	29.5	30.5
10	-	16.0	52	2	33.6	102.0	286.0	27.0	30.5
	30%							í	
Mean	*****	21.2	49.8	2.4	30.7	105.4	281.7	28.9	30.8
SEM		1.4	2.2	0.2	0.9	2.4	16.6	0.5	0.8
t-test	t	NS	NS	NS	NS	NS	^S p < 0.01	NS	NS

Demonstrates the results obtained from expt. 2. The extract was given orally and daily indose of 400 mg/kg/day for a period of 15 days. There was a statistical significant reduction in weight of seminal vesicle and prostate (p < 0.01) but other parameters measured were not altered. Percentage of mating positive animals was not reduced in experiment group.

IUDIC									
No. of	Mating	Total sperm	perm motility			eight (m	Body wt.(gm)		
mice	Macing	(mill)	% gr	ade	epid.	testes	SV & total prost.	start	end
Contro	l								
1		12.7	26	1	38	142	422	38.0	39.2
2	+	20.5	35	1,2	42	116	327	34.0	40.0
3	+	18.0	35	1	40	98	322	31.8	40.8
4	-	19.6	40	1	39	97	384	39.5	35.0
5		24.4	43	2	43	107	494	37.8	38.7
6	-	18.7	47	2	41	120	387	36.5	37.0
7	-	15.6	45	3	32	110	274	29.5	31.5
8	-	15.6	31	1	34	100	362	31.8	32.5
	25%							5	
Mean		18.1	37 .7	1.6	38.6	111.2	371.5	34.9	36.8
SEM		1.3	2.6	0.3	1.4	5.3	23.9	1.3	1.2
Experi	ment								
1	_	20.8	35	2	37	100	242	32.3	35.8
2	-	17.9	30	2	38	118	276	35.0	36.2
3	-	17.5	40	2	32	90	281	33.5	35.0
4	-	23.4	39	2	40	116	333	31.8	38.3
5	+	16.5	52	3	42	116	328	35.6	36.2
6	-	16.0	42	2	40	106	337	36.4	37.5
7	· - ·	17.0	42	2	36	108	243	35.4	36.7
8	-	26.4	41	2	40	122	238	32.7	35.0
	12.5%								
Mean	· · · · · · · · · · · · · · · · · · ·	19.4	40.1	2.1	38.1	109.5	284.7	34.1	36.3
SEM		1.3	2.2	0.3	1.1	3.8	15.1	0.6	0.4
t-test	t.	NS	NS	NS	NS	NS	^S p <0.0	NS NS	NS

Demonstrates the results obtained from expt. 2. The extract was given orally and daily in dose of 400 mg/kg/day for a period of 60 days.

Weight of seminal vesicle and prostate was shown to be statistical significantly reduced (p <0.01) while other parameters were not changed. 25%, 12.5% of mating positive was observed in control and experiment groups respectively.

Table										
No.		Total	Spe		Wei	ght (mg	g)		Body	wt.(gm)
	Mating	sperm	moti	lity	cauda	testes	SV&	VP	start	end
rats		(mill)	%	grade	epid.		total			
						,	prost.			
Contro	1									
1	+	70.0	47	2	58	946	1770	328	175	179.
2	_	49.5	56	2	42	1116	1628	306	165	163
3	-	45.5	49	2	48	878	1621	298	168	163
4	-	55.0	55	2	59	1154	2004	394	190	194
5	-	41.0	81	3	48	1495	1559	223	238	235
6	-	48.0	67	2	58	1413	1492	281	250	248
	16.7%									
Mean		51.5	59.2	2.2	52.2	1167	16 7 9	305	197.7	197
SEM		4.1	5.2	0.2	2.9	100.5	75.1	22.9	15.1	14.9
Experi	iment									
		43.5	76	1	60	1304	1951	389	254	259
1	+	39. 0	63	3	44.4	1263	2148	402	227	220
2 3	_	40.0	56	1	46	1062	1758	386	195	206
4	-	42.0	64	1	44	1264	1609	209	180	194
5	-	50.5	59	2	42	728	1493	163	180	180
0	20%	•								
		43.0	63.6	1.6	47.3	1124.2	1791.8	309.8	207.2	211.8
Mean							117.5	51.1		13.5
SEM		2.0	3.4	0.4	3.2	107.7	TT/°2		T-307	
t-tes	t	NS	NS	NS	NS	NS	NS	NS	NS	NS
				4 20						

Experiment 3 Effects of volatile oil of sweet basil on spermatogenesis in rats.

Table 11

Demonstrates the results obtained from expt. 3 showing total sperm count, sperm motility, weight of testis, cauda epididymis, seminal vesicle and prostate and ventral prostate in control & experiment groups. The oil was given orally in dose of 145.6 mg/kg/day (equivalent to 50 gm fresh plant/ kg/day) for continuous 15 days. There was no statistical significant difference in all of the parameters measured. 16.7%, 20% of mating positive was observed in control and experiment groups respectively.

No. of of rats Total mating Sperm sperm (mill) Total sperm (mill) Sperm sperm (mill) Weight (mg) Body wt.(gm) Count (mill) Sperm (mill) Weight (mg) Body wt.(gm) Cauda testes SV& total VP start end 1 + 35.3 40 1 47.6 1015 1380 264 193 212 2 + 42.5 64 3 52.0 1211.6 1573 334 210 256 3 - 57.8 87 3 63.0 1370 2425.6 451.6 263 273 4 - 61.0 64 2 70.4 154.8 173 395 235 263 5 - 36.0 55 2 50.0 1048 1588 343 207 223 6 - 16.3 61 2 32.0 196.1 33.0 10.8 11.5 Seperiment	Table	e 12		>							
of rats Mating count (mill) % grade cauda testes SV& VP start end total prost. ¹ + 35.3 48 1 47.6 1015 1380 264 193 212 2 + 42.5 64 3 52.0 1211.6 1573 334 210 256 ¹ + 35.8 87 3 63.0 1370 2425.6 451.6 263 273 4 - 61.0 64 2 70.4 1544.8 1783 395 235 263 ⁵ - 36.0 55 2 50.0 1048 1588 343 207 223 6 - 18.3 61 2 33.0 979 974 226 198 200 ³ - 57.6 87 3 63.7 2.2 52.7 1194.7 1620.6 335.6 217.7 239.2 ⁶ - 18.3 61 2 33.0 979 974 226 198 200 ³ - 38.5 ⁶ - 18.3 61 2 33.0 979 974 226 198 200 ³ - 55.4 0.3 5.3 92.0 196.1 33.8 10.8 11.5 ⁵ - 36.0 57 2 61.8 1042 250 193 195 ² + 46.5 71 3 48.8 1005 1585 388 223 234 ³ - 48.5 60 2 62.0 1402 1738 269 202 244 ⁴ - 63.0 57 2 61.8 1218 1567 349 209 240 ⁵ - 27.5 54 1 44.4 1150 1250 256 182 206 ⁶ - 34.3 40 1 52.0 1040 1044 165.4 105 204 ¹⁶ 7%	No						Weight (1	mg)		Body w	rt.(gm)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	of	Mating	count		-		testes	total	VP	start	end
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Contr	01									
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2										
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	4	-	61.0	64	2	70.4	1544.8	1783	395	235	263
Mean41.8 63.7 2.2 52.7 1194.7 1620.6 335.6 217.7 239.2 SEM 6.5 5.4 0.3 5.3 92.0 196.1 33.8 10.8 11.5 Experiment1- 11.3 69 2 40.6 608 1044 250 193 195 2+ 46.5 71 3 48.8 1005 1585 388 223 234 3- 48.5 60 2 62.0 1482 1738 269 202 244 4- 63.0 57 2 61.8 1218 1567 349 209 240 5- 27.5 54 1 44.4 1150 1250 256 182 206 6- 34.3 40 1 52.0 1040 1044 165.4 185 204 16.7% 7.4 4.6 0.3 3.6 117.7 122.1 32.2 6.3 8.6		-									
SEM 6.5 5.4 0.3 5.3 92.0 196.1 33.8 10.8 11.5 Experiment1- 11.3 69 2 40.6 608 1044 250 193 195 2+ 46.5 71 3 48.8 1005 1585 386 223 234 3- 48.5 60 2 62.0 1482 1738 269 202 244 4- 63.0 57 2 61.8 1218 1567 349 209 240 5- 27.5 54 1 44.4 1150 1250 256 182 206 6- 34.3 40 1 52.0 1040 1044 165.4 185 204 16.7% 38.5 58.5 1.8 51.6 1083.8 1371.3 279.6 199 220.5 SEM7.4 4.6 0.3 3.6 117.7 122.1 32.2 6.3 8.6	2	33.3%		1							
Experiment 1 - 11.3 69 2 40.6 608 1044 250 193 195 2 + 46.5 71 3 48.8 1005 1585 388 223 234 3 - 48.5 60 2 62.0 1482 1738 269 202 244 4 - 63.0 57 2 61.8 1218 1567 349 209 240 5 - 27.5 54 1 44.4 1150 1250 256 182 206 6 - 34.3 40 1 52.0 1040 1044 165.4 185 204 16.7% - - 38.5 58.5 1.8 51.6 1083.8 1371.3 279.6 199 220.5 SEM 7.4 4.6 0.3 3.6 117.7 122.1 32.2 6.3 8.6	Mean		4 1. 8	63.7	2.2	52 .7	1194.7	1620.6	335 . 6	217.7	239.2
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	SEM		6.5	5.4	0.3	5.3	92.0	196.1	33.8	10.8	11.5
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Exper	iment									
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		-									
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		+									
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		_									
6 - 34.3 40 1 52.0 1040 1044 165.4 185 204 16.7% Mean 38 5 58.5 1.8 51.6 1083.8 1371.3 279.6 199 220.5 SEM 7.4 4.6 0.3 3.6 117.7 122.1 32.2 6.3 8.6		_									
Mean 38 5 58.5 1.8 51.6 1083.8 1371.3 279.6 199 220.5 SEM 7.4 4.6 0.3 3.6 117.7 122.1 32.2 6.3 8.6		-									
SEM 7.4 4.6 0.3 3.6 117.7 122.1 32.2 6.3 8.6		16.7%									
	Mean		38 5	58.5	1.8	51.6	1083.8	1371.3	279.6	199	220.5
t-test NS NS NS NS NS NS NS NS NS	SEM		7.4	4.6	0.3	3.6	117.7	122.1	32.2	6.3	8.6
	t-tes	t	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 12 Demonstrates the results obtained from expt. 3. The oil was given orally in dosage of 145.6 mg/kg/day (equivalent to 50 gm fresh plant/ kg/day) for continuous 60 days. There was no statistical significant difference in all of the parameters measured. 33.3%, 16.7% of mating positive animals was observed in control and experiment groups respectively.

lo. of	Mating	Total sperm count	Sper motil		cauda	leight (r testes	SV&	VP	start	end
ats		(mill)	% gr	ade	epid.		total prost.			
Contro	21			•	00.0	1006 0	2361.0	493.0	335	350
1	-	100.5	70	2	0.88	1896.0 1627.6	2205.6		285	295
2	+	52.0	76	3	54.0 90.0	1731.4	2406.2		313	327
3	-	132.5	59	2 1	83.2	1563.6	2485.6		290	302
4	-	54.0	50 65	3	70.0	1565.6	2469.4		311	323
5 6	+	128.0 75.0	63	3	84.0	1719.2	2301.8		303	330
6		13.0	03	5	0400	1/1000				
	33.3%									
Mean		90.3	63.8	2.3	78.2	1683.9	2371.6	491.3	306.2	322
SEM		14.5	3.7	0.3	5.6	51.7	43.3	20.5	7.3	8.8
Exper	iment								200	305
1		56.0	62	1	71.0	1405.0	1699.0		298	305 3 15
2	+	41.0	53	1	43.4	2843.8	1516.8		305 305	303
3		42.0	64	1	64.0	1704.0	1825.4		2 98	277
4	+	48.2	80	3	51.6	1349.0	1555.0 1776.2		275	270
	-	63.0	58	2	69.6	1363.2	1326.0		311	298
5	+	13.5	64	1	53.2	1682.8		288.4	290	295
5 6	-	11.5	47	1	48.4	1657.0	132404	20084	250	
5										
5 6	42.9									
5 6	42.9	39.3	61.1	1.4	57.3	1714.9	1574.7	334.2	297.4	294.
5 6 7	42.9	39.3 7.5		1.4 0.3	57.3 4.1	1714.9 197.2	1574.7 76.7			2 94. 6.

Demonstrates the results obtained from expt. 3. The oil was given orally in dosage of 291.3 mg/kg/day (equivalent to 100 gm fresh plant/kg/day) for continuous 15 days.

It could be seen than total sperm count was statistical significantly decreased in experimented animals as compared to control animals ($p \leq 0.01$) weight of cauda epidimymis was also decrease ($p \leq 0.01$) and there was highly significant ($p \leq 0.001$) decreased in weights of seminal vesicle and total prostate and ventral prostate. Although weight of testis was not altered, it should be noted that there water retention in testis of experiment animal No. 2 it was pale in color which was different from testis of control animals. There was also statistical significant difference in body weight gain ($p \leq 0.05$) during experimental period.

	مادين ورجع معالية الم	,		• • • • • • • • • • • • • • • • • • •							
No.		Total sperm	-	erm ility		Weitht	(mg)		Body wt.(gm)		
of	Mating			-	cauda	teste		VP	start	end	
rat		(mill.) %	grade	epid.		total prost				
Contro	<u></u>		-		(****** * *****************************				****		
1	+	66.8	79	3	82	1674	1956.0	474.0	274	320	
2	+	65.5	79	3	78	1764	2468.8			361	
3	+	49.2	61	1	81	1684	2630.6		290	352	
4	+	46.5	65	2	60	1544	1744.8			309	
5	+	68.8	73	2	70	1656	2142.0	510.0	296	342	
6	+	59.0	67	2	69	1758	2519.0	502.0	308	363	
	100%										
Mean		59.3	70.7	2.2	73.3	1680	2243.5	491.9	2 83 . 7	341.2	
SEM		3.9	3.1	0.3	3.5	32.8	143.6	13.4	6.6	9.1	
Experi	ment		\$					an er er annenden			
1	+	64.3	61	1	62	1563	2221	311	312	201	
2	+	66.8	77	1	78	1776	2076	370	330	301 313	
3	-	40.8	72	1	46	1358	1619	365	277	264	
4	+	4.0	41	1	42	964	1250	308	310	336	
5		33.5	65	1	46	1694	2014	410	315	332	
6	-	48.5	58	1	51	1552	1468	382	260	280	
,	50%	2				5					
Mean		42.9	62.3	1	54.2	1484.5	1774.7	357.7	300.7	304.3	
SEM		9.4	5.1	0	5.5	119.3		16.4	10.8	11.6	
t-test		NS	NS	s _p (0.01	^S p € 0.0)2 ^{NS}	NS S	⁵ p ∢ 0₀001	NS	^S p (0.05	

Demonstrates the results obtained from expt. 3. The volatile oil of sweet basil was given orally in dosage of 291.3 mg/kg/day (equivalent to 100 gm fresh plant/kg/day) for continuous 15 days. There was statistical significant reduction in weight of cauda epididymis (p $\langle 0.02 \rangle$, in weight of ventral prostrate (p $\langle 0.001 \rangle$ and grude of motility (p $\langle 0.01 \rangle$. However, testicular weights were not significantly changed. Body weight gain during experimental period was significantly decreased (p $\langle 0.05 \rangle$). A 50% reduction in percentage of mating positive in experimental group was observed.

			0			lad ab t	()		Dedu	(~m)
No. of	Matino	Total sperm count		lity	cauda	Veight testes			Body wt start	end
rats		(mill)	%	grade			total prost.		•	
Contro	<u>01</u>	1		-	. 1					
1	-	85.7	73	3	81	1754	283 0	632	337	335
2	+	62.0	43	1	72	1531	2178	463	336	337
3	+	105.5	75	2	89	1980	3003	620	354	370
4	+	50.0	46	1	59.6	1632	279 3	569	335	343
	75%									
Mean		75.8	59.2	1.7	75.4	1724.2	27 01	571	3 40 . 5	346.2
SEM		12.4	8.5	0.5	6.3	48.3	180.2	3 8 .5	4.5	8.1
						6			<u></u>	
Experi	ment									
1	-	2.8	0	0	38.0	2115	379	159	333	306
2	+	29.0	67	1	37.8	2640	1838	3 90	265	260
3	+	61.5	65	2	59.0	2617	2032	357	299	302
4	-	29.7	57	1	40.0	2012	1124	236	299	287
5	+	28.8	45	1	54.0	2160	1433	284	311	300
6	+	39.2	46	1	51.4	2204	1567	335	288	274
7	+	83.0	6 3	3	64.0	2534	1933	400	343	3 09
	71.4%	6						Υ.		
Mean		39.1	49	1.3	49.2	2326	1472.3	308.7	305.4	291.1
SEM		9.8	8.8	0.4	4.0	99	217.4	33.2	10.0	6.9
t-test	5	p≮0.05	NS	NS	s _p <0.01	^S p∢0.01	^S p(0.01	Sp \$0. 001	^S p(0.05	sp(0.001

Demonstrates the results obtained from expt. 3. The volatile oil of sweet basil was given orally in dosage of 582.6 mg/kg/day (equivalent to 200 gm of fresh plant/kg/day) for continuous 15 days. There was significant reduction in sperm concentration (p < 0.05), in weight of cauda epididymis (p < 0.01), in weight of seminal vesicle and prostate (p < 0.01) and of ventral prostate (p < 0.01). In this expt., weight of testis was significantly increased (p < 0.01) due to water retention in this organ. Body weight at the end of experiment was statistical highly significant decreased (p < 0.001). 75%, 71.4% of maiting positive was observed in control and experiment groups respectively.

Table	16					-			
No. of	Total s perm	-	erm ility		Weight	(mg)		Body w	t.(gm)
rats	count (mill)		-	cauda epid.	testes	total	VP	start	end
 		• • • • • •		• • • • •		prost.	•••••	are a la	• • • • •
Control									
1 2	72.5 80.0	64 80	1 2	62 82	1466 1554	2098 2448	4 7 0 489	325 293	359 337
3 4 5	94.5 92.5 35.7	73 69	3 1 1	92 92 58	1685 1694	2584 3292	540 754	323 304	368 336
6	60.5	47 75	3	92	1612 1870	2086 2726	421 650	3 00 3 20	335 355
Mean	72.6	68	1.8	79.7	1646.8	2539	554	310.8	348.3
SEM	9.0	4.7	0.4	6.4	56.6	183.7	51.1	5.5	5.8
Experim	ient						ан н 1		
1	21.6	21	1	43.0	2018	1782	162	306	326
2	14.3	0	0	28.2	1435	767	217	323	252
3	14.5	37	1	44.0	2267	1120	300	284	280
4 5	41.3 20.5	73 45	1 1	44.0 42.0	1819 1710	1944 1894	358 320	306 296	311 270
Mean	22.4	35.2	0.8	40.2	1849.8	1501.4	271.4	303	287. 8
SEM	4.9	12.2	0.2	3.0	140.5	235.9	35.8	6.4	13.5
t-test	^S p < 0.01	S p<0₀05	^S p∕0₀05	Sp(0.001	NS	s _p (0.01	⁵ p (0.01	NS	^S p∢0₀01

Demonstrates the results obtained from expt. 3. The volatile oil of sweet basil was given orally in dosage of 582.6 mg/kg/day (equivalent to 200 gm fresh plant/kg/day) for continuous 40 days. There was statistical significant decrease in sperm concentration (p < 0.001), in weight of cauda epididymis (p < 0.001), in weight of total prostate & seminal vesicle (p < 0.01) and in weight of ventral prostate (p < 0.01). Sperm motility was also reduced in both percentage (p < 0.05) and grade (p < 0.05). Weight of testis was not altered, however, there was obvious water retention in the testis of experiment animals No. 1 and No. 3. A reduction in body weight gain was also significant evident (p < 0.01)

Originally it was planned to feed for 60 days continuously but due to toxicity manifestation of the testing material, experimental period was stopped at 40 days and mating was not performed.

No.		Total	Spe: moti		- Wo	eight (1	mg)		Body w	t.(gm)
of rats	Mating	count		-	cauda	testes		VP	start	end
		(mill)	% g.	rade	epid.		total prost.			
Contr	01									
1	+	153.7	38	3	236	1563	3253	616	400	420
2	+	165.9	7 9	3	240	1903	3394	548	3 90	3 95
3	+	113.2	74	2	204	1636	2652	576	342	365
4	+	126.0	80	2	202	1571	2762	512	350	398
5	+	142.5	69	2	201	1776	2843	528	338	354
6	+	100.1	80	2	216	1990	2462	596	373	409
7	+	159.7	81	3	252	1783	3604	52 0	3 8 7	404
	100%									
Mean		137.3	78.7	2.4	221.6	1746	2995.7	556.6	368.6	392.1
SEM		9.4	2.2	0.2	7.9	62.2	160.0	15.2	9.5	9.1
Exper	iment									
1	+	100.5	70	2	227	357 0	257 8	412	388	375
2	+	97.1	68	2	150	1690	2621	575	350	337
3	+	108.0	69	2	195.8	1533	2178	398	369	360
4	+ .	107.2	72	3	172	2578	2094	500	368	378
5	+	66.4	80	2	164	2046	1122	441	330	300
6 7	+	82.5	65	3	184	3160	1686	496	384	398
/	-	73.1	59	2	194	3 098	1475	339	325	298
	85 .7 %									
Mean	and the second	90 .7	69	2.3	183.8	2525	1964.9	451.6	359.1	349.4
SEM		6.3	2.4	0.2	9.5	298.3	212.5	29.6	9.4	14.8
t-te s	t	^S pran ^S	⁵ p(0.02	2 NS ⁵	5 p (0 . 01	Sp(0.05 S	⁵ p ∢ 0.01 ^S	p (0.01	NS	S p (0₀05

Table 17 Demonstrates the results obtained from expt. 3. The volatile oil of sweet basil was orally given in dosage of 320 mg/kg/day for continuous 60 days. There was statistical significant reduction in sperm concentration (p < 0.01) and percentage of sperm motility (p < 0.02), weight of cauda epididymis (p < 0.01), weight of total prostate & seminal vesicle (p < 0.01) and of ventral prostate. For testicular weight, it was significantly increased (p < 0.05) due to water retention. Body weight gain was also statistical significant different (p < 0.05). 100%, 85.7% of mating positive was observed in control and experiment groups respectively.



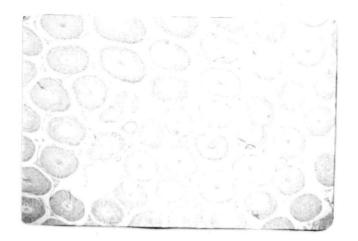
Table 18 Summarized data of antifertility study of oil of

								•	1
ſ	Dose	145.6mg/	kg/day	291.3mg/	'kg/day	582.6mg	g/kg/day	320mg/	kg/day
	Day	15 %	60 %	15 %	60 %	15 %	40 %	15 %	60 %
	Sperm count	NS	NS	1,56.5	NS	148.4	159.1	-	133.9
	Motility			9					
	percent	NS	NS	NS	NS	NS	148.2	-	12.3
	grade	NS	NS	NS	154.5	NS	↓55.6	-	NS
	Weight of	20							
	caud.epid.	NS	NS	↓26.7	↓16.1	↓34.7	↓ 49.6	-	↓17.0
	testis	NS	NS	NS	NS	134.9	NS	-	↑44•6
	SV&prost.	NS	NS	₩33.6	NS	1,45.5	140.9	-	↓34.3
	VP	NS	NS	1 31.9	↓27.3	\$45.9	151.0	-	18.8
	Body wt.	NS	NS	NS	c ↑18.2	-	c111	7	c.16.4
					E ↑1.2	-	E↓ 5		E.2.8
	Mating	no change	↓50	no c hang	je ↓50	no chang	e -	-	14.3
١,		J			1				

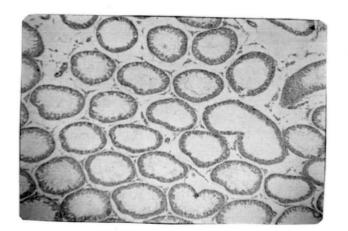
O. basilicum in rats.

Result of histological study

Histological examination of the testes of the rat given oil of O. basilicum indose of 320 mg/kg/day orally& daily for 60 days showed a significant changes in spermatogenic elements in the seminiferous tubules (figure 24, 25 p. 115, 116) of the treated animals. Approximately, 90 % of seminiferous tubules were devoid of spermatids and spermatozoa & only spermatogonia were found. Seminiferous tubules were enlarge in size as compared to those of control group. There was also a decrease in number of Sertoli cell but cellular characters are still normal. Leydig cell appeared normal. Mutugenic changes were not observed.

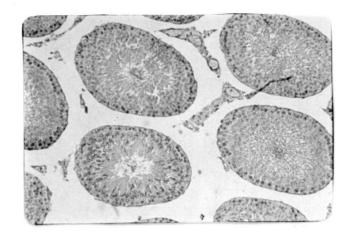


(1)

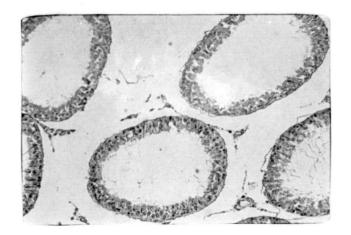


(2)

Figure 25 The photographs illustrating testicular histology of rat (1) control animals (2) treated animals with oil of <u>O.basilicum</u> X 100 magnification.



(1)



(2)

٨

Figure 25 The photographs illustrating testicular histology of rat (1) control animals (2) treated animals with oil of <u>O.basilicum</u> X 400 magnification.

	T	Total	Spe		W	eight (1	ng)		Body	wt.(gm)
No. of rats	Mating	sperm count (mill)		lity grade	cauda epid.	testes	SV& total prost.	VP	start	end
					2			i.		•
Contr	ol									
1 2 3 4 5 6	+ - + + +	133.9 126.0 145.5 126.8 102.4 102.4	36 64 26 65 52 45	1 3 1 2 3 2	190 182 189 154 184 151	1574 1686 1762 1690 1746 1570	3126 2406 2794 2410 2110 1860	346 490 404 400 37 0 35 4	284 309 315 303 318 295	308 334 345 334 357 325
							2000		275	525
	100%	·····	d x		,			an a		
Mean		122.8	48	2	175	1671.3	2451	394	304	333.8
SEM		7.1	6.3	0.4	7.2	33.7	186.5	21.5	5.2	6.8
Exper	iment									
1 2 3 4 5 6 7	+ + + + + +	125.3 135.4 110.3 132.0 123.8 136.1 128.6	60 50 18 45 64 55	2 2 1 2 2 2 2	176 166 171 174 166 152	1640 1680 1760 1740 1623 1650 1658	2853 2894 1845 1936 1993 1834 16 7 6	510 516 302 374 348 350 374	294 308 300 286 329 325 295	367 326 328 309 340 345 316
	85.7%	6			5					
Mean		127.4	48.9	1.9	167.3	1678.7	2147.3	396.3	305.3	333.0
SEM		3.4	5.7	0.1	2.9	19.7	191 . 2	31.5	6.2	7.4
t-tes	t	NS	NS	NS	NS	NS	NS	NS	NS	NS

..

Demonstrates the results obtained from expt 4. The volatile oil of <u>O. sanctum</u> was given orally and daily in dose of 92.3 mg/kg/day (equivalent to 100 gm fresh plant/kg/day) for a period of 15 days. There was no statistical significant difference in all of the parameters measured. Percentage of mating positive animals was not reduced in experimental group.

Ta	ble	20

	1		0			eight (1	ma)		Body wt	.(gm)
No. of rats	Mating	Total sperm count (mill)	Spe moti %	rm lity grade	cauda	testes	SV& total	VP	start	end
							prost.			
Contr	ol									
1	+	181.1	71	3	190	1 8 7 6	2713	450	294	408
2	+	177.0	76	3	240	2020	2518	444	298	353
3	+	127.1	52	1	196	1640	2595	368	298	368
4	+	185.3	65	2	265	1894	3210	472	300	420
5	+	142.5	73	3	178	1562	2638	550	296	332
6	+	166.9	60	3	181	1690	2014	292	304	320
	100%									
Mean		163.3	66.2	2.5	208.3	1780.7	2614.7	429.3	298.3	366.8
SEM		9.6	3.7	0.3	14.6	72.0	156.6	36.4	1.4	16.5
	• • •									
Exper	riment						2007	E 4 3	334	393
1	+	177.8	90	3	220	1910	2887	543 396	297	363
2	+	167.3	70	2	201	1712	2518 2318	396	292	350
3	+	150.0	65	1	168	1578	2789	477	303	349
4	+	135.0	76	2	181	1532 1795	2321	391	315	367
5	+	120.4	78	3	185 220	1803	2687	380	295	375
6	+	174.4	88	3 3	220	1706	2954	580.		350
7	+	163.9	7 0	3	221	1700	2554			
	100%									
Mean		155.5	76.7	2.4	200.3	1719.4	2638.9	450.1	308	363.9
SEM		8.1	3.6	0.3	8.6	49.8	98	31.6	5.9	6.2
t-te	est	NS	NS	NS	NS	NS	NS	NS	NS	NS

Demonstrates the results obtained from expt. 4. Oil of <u>O. sanctum</u> was given orally and daily in dose of 92.3 mg/kg/day. (equivalent to 100 gm fresh plant/kg/day) for a period of 60 days. There was no statistical significant difference in all parameters measured. Percentage of mating positive animals was not reduced in experimental group.

÷

No.		Total	-	erm lity	W	eight (r		Body wt.(gm)		
of rats	Mating	sperm count (mill)		grade	cauda epid.	testes	SV& total prost.	VP	start	end
Contr	ol									
1	+	65.5	50	2	79	1782	2166	344	254	295
2	+	42.3	62	2	52	1586	1598	332	268	323
3	+	61.8	57	2	60	1500	1974	417	267	30 7
4	+	58.5	66	2	50	1747	2374	420	254	294
5	+	50.8	75	3	54	1634	1862	412	249	283
6	+	37.3	65	1	61	1758	2244	3 88	260	307
	100%				* 					
Mean		52 .7	62.5	2	59.2	166 7. 8	2036.3	385.5	258 . 7	3 01.5
SEM		4.6	3.5	0.3	4.3	45.9	115.5	15.8	3.1	5.7
Exper	iment									
1	+	52.5	72	2	79	1 7 58	2091	351	267	312
2	+	52.5	46	1	70	1693	2106	409	272	302
3	+	82.0	55	2	86	1666	1872	302	278	324
4	+	63.5	53	1	67	1490	2078	345	262	306
5	+	54.0	58	2	52	1288	2839	575	273	317
6	+	57.0	52	2	71	1705	2442	350	262	308
	100%									
Mean	i	60.3	56.0	1.7	70.8	1600.0	2238.0	388.7	269.0	311.5
SEM		4 •7	3.6	0.2	4.7	72.7	141.6	3 9.8	2.6	3.3
t-tes	t	NS	NS	NS	NS	NS	NS	NS	NS	NS

Demonstrates the results obtained from expt. 4. Oil of <u>O. sanctum</u> was given orally and daily in dose of 184.6 mg/kg/day (equivalent to 200 gm fresh plant/kg/day) for a period of 15 days. There was no statistical significant difference in all of the parameters measured. Percentage of mating positive animals was not reduced in experimental group.

Table 21

Ta	b1	e	22	-

Total Sperm Weight (mg) Body wt. No. sperm motility									t.(gm)	
No. of rat s	Mating	sperm count (mill)		grade	cauda epid.	testes	SV& total prost.	VP	start	end
		-					prose.			
Control										
1	+	161.3	48	1.	221	1530	3110	484	307	328
2	+	170.6	71	2	216	1690	2340	378	250	327
3	+	158.3	58	3	227	1772	2661	396	250	344
4	+	129.4	54	2	190	1840	2510	502	263	362
5	+	118.9	58	1	198	1829	2758	444	260	368
6	+	140.6	61	3	183	1645	2594	556	246	320
7	+	130.9	76	3	180	1706	2562	554	275	345
	100%							2		
Mean	·····	144.3	60.9	2.1	202.1	1716.0	2647.9	473.4	264.4	342
SEM		7.3	3.7	0.3	7.2	41.3	91.3	26.8	8.0	6.9
Experiment										
1	+	130.9	55	1	176	1850	2664	464	273	343
2	+	136.5	59	3	163	1585	2352	428	225	355
3	+	150.0	65	3	209	1733	2612	422	264	318
4	+	146.6	31	1	231	1680	3208	576	275	395
5	+	138.0	64	3	157	1500	2254	394	254	337
6	+	129.0	38	1	177	1810	2222	350	265	310
	100%				£					
Mean		138.5	52.0	2	185.5	1693	2552	439	259.3	343.0
SEM		3.4	5.8	0.4	11.7	54.5	151	31.5	7.5	12.4
t-test		NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 22 Demonstrates the results obtained from expt. 4. Oil of <u>O, sanctum</u> was given orally and daily in dose of 184.6 mg/kg/day (equivalent to 200 gm fresh plant/kg/day for a period of 60 days. There was no statistical significant difference in all of the parameters measured. Percentage of mating positive animals was not reduced in experimental group.