replications. Soil and 10 plants were sampled 50 days after planting for the estimation of populations of nematodes per g fresh root and 500 g soil from each weed plant, from each replicate[4]. The buildup index (Pf-Pi)[5] was calculated and weed plants were classified as non-host (buildup index 5), poor-host (5·1–10), and good-host (10·1 and above) basing on the buildup of nematode populations in rice which is susceptible to the nematodes.

Cynodon dactylon, *Echinocloa colonum*, *Paspalidium flavidum*, *Heliotropium indicum* and *Oryza sativa* (var. *Bala*) were good-hosts for all the four nematodes. *Oryza officinalis* and *Leersia hexandra* were good-hosts for *Tylenchorhynchus claytoni*, *Macroposthonia onoensis* and *Pratylenchus indicus*. *Brachiaria distachya* and *Oryza collina* were good-hosts for the ring, lesion and lance nematodes. *Eragrostis unioloides*, *Leptochloa panicoides*, *Panicum repens*, *Ludwigia perennis* and *Gomphrena celosioides* supported the endoparasites only.

It is interesting to find that none of the weeds tested were resistant to all the four nematodes.

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COMPENSATORY HYPERTROPHY OF CONTRALATERAL TESTIS AND ITS INHIBITION WITH TESTOSTERONE IN THE PARTIALLY CASTRATED GREEN FROG, *RANA HEXADACTYLA* LESSON

RELATIVELY little attention has been paid to the factors controlling the compensatory hypertrophy of testis in Amphibia[1]. It is generally believed that the factors controlling the intact testis also controls the compensatory hypertrophy of the testis following subtotal gonadectomy[2,3].

Realising the need for further study on compensatory hypertrophy of the contralateral gonad in unilaterally castrated lower vertebrates, especially on the males, the present work was undertaken on male frogs, *Rana hexadactyla* Lesson.

Adult male frogs of average 40–60 gm bodyweight and 70–90 mm snout to vent length were selected for this study. The animals were kept under uniform husbandry conditions and fed *ad libitum* with earth worm.

The frogs were divided into four groups of 5 animal each :

1. Sham operated uninjected controls.
2. Partially castrated uninjected controls.
3. Partially castrated but Amphibian Ringer treated controls.
4. Partially castrated and treated with 1 mg of testosterone.

Microcrystals of 1 mg testosterone were prepared and dissolved in 5 ml of Amphibian Ringer solution, injected twice a week for four weeks.

After a month, all frogs were autopsied and testes were fixed in Bouin, sectioned at 7 μ and stained with haematoxylin and eosin. Quantitative assessment of spermatogenetic stages was done adopting Van Oordt's[4] classification. The presence and nature of interstitium have been noted.

The results show compensatory hypertrophy in contralateral testis. (Fig. 2). All spermatogenetic stages show marked increase ($P < 0 \cdot 01$). The interstitium was moderate and spermiation was evident by scattered sperms in lumen. In addition to this, the weight of the remaining intact testis and seminiferous tubular diameter showed marked increase ($P < 0 \cdot 01$). There is an increase of the average diameter of the testis and seminiferous tubules. There is an hypertrophy of interstitium. It is claimed that unilateral castration causes compensatory hypertrophy of contralateral testis in young animals and not mature males. Even this has been described as accelerated growth and not compensatory hypertrophy[5]. But earlier studies have shown compensatory hypertrophy in contralateral testis. Our present findings also prove this phenomenon of compensatory hypertrophy in contralateral testis in that there is an increase of 33% in the weight of contralateral testis (Table I).

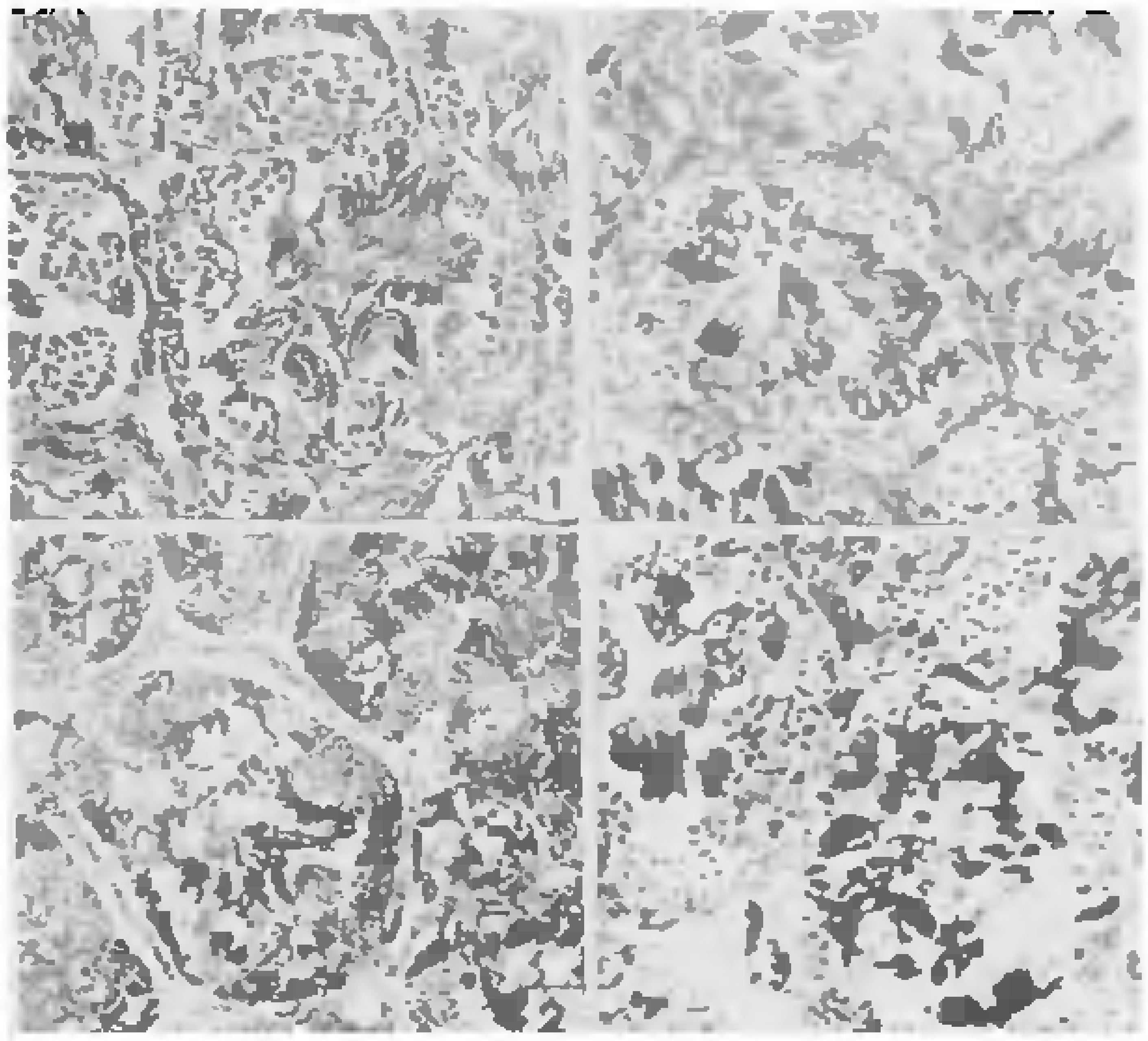
TABLE I

Effect of semi-castration and testosterone treatment on testis in Rana hexadactyla *Lesson*

Details of experiment	Effect on spermatogenetic stages	Relative Testicular Wt. (mg)
1. Sham operated uninjected control	..	1·1±0·8
2. Partially castrated uninjected control	I, III, V* Dr.	0·9±0·2
3. Uninjected control contralateral testis	I, II, III, V* In.	1·5±0·2 In.
4. Partially castrated Treated with Vehicle	II, III* Dr.	0·9±0·1
5. Vehicle treated contralateral testis	I, II, III* In.	1·4±0·3 In.
6. Partially castrated treated with 1 mg of testosterone	II, III++	0·6±0·1
7. 1 mg testosterone treated contralateral testis	II, III++	1·0±0·1

* P < 0·01. ++ Pycnosis. Dr. = Decrease. In. = Increase.

In partially castrated testis, there is a significant reduction of all spermatogenetic stages (P < 0·01). Interstitium was sparse to moderate with scattered sperms in the lumen. Administration of testosterone to partially castrated animals shows marked inhibition of all stages recorded in the present study (Fig. 4). Secondary spermatogonial cell nests show pycnosis (Table I). Large number of disorganised cell nests were observed. Interstitium was sparse. The partial excision of testis induced only mild stimulation of gonadotrophin secretion. Administration of testosterone to such animals bring about inhibition of spermatogenetic stages (P < 0·01) in contralateral testis (Fig. 3) thereby indicating a direct action of testosterone on gonads. Sometimes it may probably be acting through pituitary inhibiting the release of gonadotrophin and thereby making the contralateral testis insensitive to pituitary gonadotrophins, thus inhibiting compensatory hypertrophy.



FIGS. 1–4. Fig. 1. T.S. of Testis of Control Frog, × 100. Fig. 2. T.S. of contralateral testis of Frog, × 100. Fig. 3. T.S. of contralateral testis of frog treated with 1 mg of testosterone, × 100. Fig. 4. T.S. of partially castrated testis of frog treated with 1 mg of testosterone, × 100.

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