

STUDIES ON THE EFFECT OF IPIL-IPIL LEAF MEAL ON ANIMAL GROWTH¹

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ONE TEXT FIGURE

INTRODUCTION

The utilization of the leaves of ipil-ipil (*Leucaena glauca* Linn.) was recognized when the College of Agriculture of the University of the Philippines at Los Baños, Laguna Province, published its findings on the possibilities of ipil-ipil leaf meal for poultry feed. Molina (1952) found that ipil-ipil leaf meal possesses a potent effect in promoting animal growth without endangering health. Considering the scarcity and high cost of fish feeds, this study was conducted using rats to determine the correct proportions most favorable in enhancing growth. The possibilities of ipil-ipil leaf meal for fish culture and hatchery work should not be underestimated, especially in the culture of baños, tilapia, and other suitable fishes for backyard ponds in the rural areas. A similar study is being conducted to determine the effect of ipil-ipil leaf meal on the growth of tilapia, *Tilapia mossambica* (Peters) at the Dagatdagatan Fisheries Experimental Station, Malabon, Rizal.

One of the problems of fish culturists is the search for a suitable food which is cheap, easily prepared, available in abundant quantities locally, and at the same time possesses potent qualities in promoting the growth and normal health of fish. Chemical analysis of ipil-ipil leaves shows that they contain 35.53 per cent protein which may be considered as fairly high. Ipil-ipil leaves are readily available locally and sold at reasonable prices.

REVIEW OF LITERATURE

One of the earliest studies on ipil-ipil was made by Villegas (1922). He fed horses with the seeds, leaves, and young stems of ipil-ipil and found that the feeding resulted in the shedding of the hairs of the tail and mane.

¹ This investigation was performed at the Bio-assay Laboratory of the Bureau of Fisheries at Dagatdagatan Fisheries Experimental Station, Malabon, Rizal.

Molina (1952) found that the concentration of powdered ipil-ipil leaves in the basal diet most favorable in promoting the growth of poultry comes close to 5 parts per hundred of the basal ration. Pizarro (1947) made a study on the influence of ipil-ipil seed meal on growing chicks and found that administration of the meal caused a delay in growth and feathering. The chicks became thin and pale and mortality was high. Beaumont (1945) made experiments on ipil-ipil as a feed for horses, rabbits, swine, and chickens and reported that there were serious cases of alopecia (falling of hair) and ill-health among the animals.

EXPERIMENTAL

Forty albino rats of about the same weight were selected for the assay. When the rats were about 28 to 30 days old, litter mates were divided into 4 groups of 10 rats each such that there would be a good distribution of males and females and the total group weights about the same. These groups were fed diets containing different concentrations of powdered ipil-ipil leaves in the amounts of 0, 5, 10, and 15 parts per hundred of the basal diet (Table 1).

TABLE 1.—Components of the basic ration and the percentage of ipil-ipil leaf meal in the experimental diet.

	Components				Experimental feed ration			
	Rice bran	Fish meal	Copra meal	Ipil-ipil powder	I	II	III	IV
	Kilos	Kilos	Kilo	Kilo	Per cent	Per cent	Per cent	Per cent
Basic ration-----	15	4	1	0	100	95	90	85
Ipil-pil ration-----					0	5	10	15

The rats were placed in separate cages with raised wire screen bottoms under which were placed paper towels to prevent the loss of spilled food. Ordinary room temperature was maintained throughout the assay period. Periodic weights were taken twice a week. Observations on the health or any abnormal developments of the rats were made daily. A basal diet composed of rice bran, fish meal and copra meal was used. The powdered ipil-ipil, which constituted the major source of protein, was mixed thoroughly with this diet and, together with water, was given *ad libitum* to the rats.

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125	127
84	88
63	65

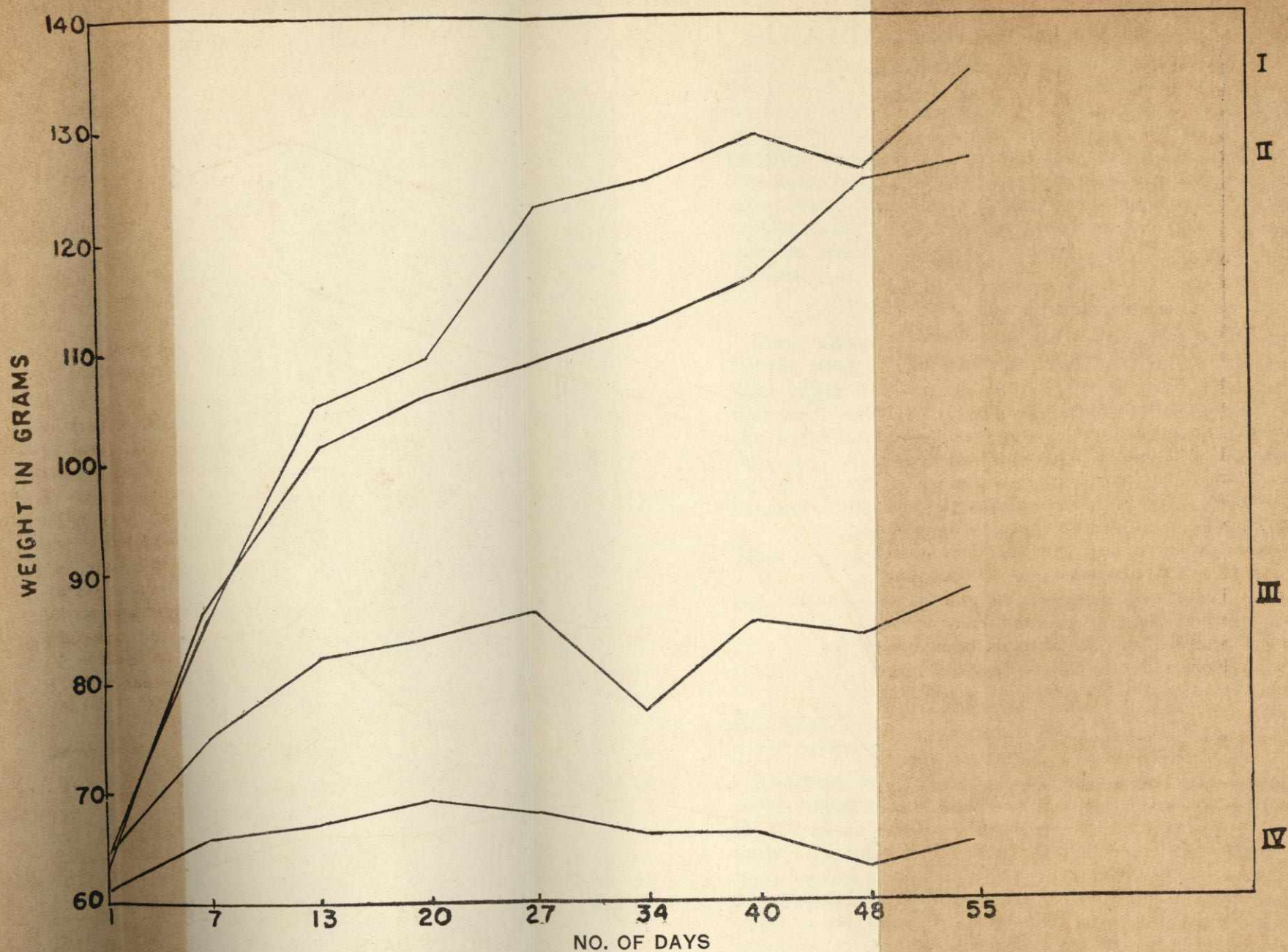


FIG. 1. Average weekly gains in weight of rats fed with different concentrations of ipil-ipil leaf meal.

The first evidence of the falling of hair occurred at the sides of the abdomen in small patches. These small areas increased in size and invaded the dorsal region of the animal. They finally coalesced and joined together forming big hairless areas. These areas continued to grow until the back of the neck was reached. Continued administration of the diet enhanced the falling of hair until the whole head region became a clean hairless area. From these places the attack turned toward the extremities. It is assumed that if the animals were subjected to an extension of the assay period there may come a time when they would develop into hairless rats. The gradual weakening of the body, together with loss of weight as caused by lack of appetite, may eventually lead to the death of the animal.

After the end of the assay period the diseased rats were given the ordinary regular rations. A few days later, the hair started to grow and the animals showed signs of resuming their normal activity. Continued administration of the normal daily ration for a period equivalent in duration to that of the assay period saw a complete regrowth of hair of better quality.

Beaumont (1945) claims that the toxic substance present in ipil-ipil leaves and seeds has been identified as mimosine ($C_8H_{10}O_4N_2$), an alpha-amino acid with phenolic properties and found in amounts of 3 and 5 per cent in leaves and seeds, respectively.

SUMMARY

Four groups of ten rats each were fed diets containing different concentrations of ipil-ipil leaf meal in the amounts of 0, 5, 10, and 15 parts per hundred of the basal ration. Periodic weights were taken and daily observations were made on the health and development of the rats. Members of Group II indicated a more rapid rate of growth and substantial gain in weight over the control and other groups but at the end of the assay period, the gain in weight was almost equivalent to that of the control group.

Rats belonging to Groups III and IV were not healthy. They lost their appetites, became highly excitable, showed signs of decrease in physical activity, made no appreciable gain in weight, had very slow rate of growth or none at all, and exhibited serious alopecia (falling of hair), especially in Group IV.

CONCLUSIONS AND RECOMMENDATIONS

The above results indicate that ipil-ipil leaf meal is a potent source of protein if used in the right proportion. Diets containing 5 per cent of powdered ipil-ipil in the basic ration seem to be most favorable in enhancing the growth of rats without affecting their health, as indicated by the rats belonging to Group II. Extreme care and precaution should be observed if this material is to be utilized as a supplement for animal and poultry feed. If used in proportions greater than 5 per cent, it may prove detrimental to the health as evidenced by the development of the disease called "alopecia" among the rats fed with ipil-ipil leaf meal in concentrations higher than 5 per cent of the basal ration.

ACKNOWLEDGMENT

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ILLUSTRATION

TEXT FIGURE

FIG. 1. Average weekly gains in weight of rats fed with different concentrations of ipil-ipil leaf meal.